Charles University in Prague

Faculty of Social Sciences

Institute of Economic Studies

MASTER THESIS

Exit Strategy - New Challenge to Central Banking. European Central Bank's Experience

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Declaration of Authorship

Hereby I declare that I compiled this thesis independently, using only the listed literature and resources.

Prague, June 29, 2010 Tatiana Bezvoleva

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TABLE OF CONTENTS

ABSTRACT

To date, three years into the first global financial and economic crisis of the XXI century, central banks find themselves with significantly expanded balance sheets as a result of the substantial support they provided to the markets through both conventional and unconventional monetary policy tools implemented in response to the turmoil. As the crisis loses its intensity, new policies need to be designed in order to unwind the significant support so as not to derail the recovery and not to pose risks to price and financial stability. For this a proper exit strategy needs to be designed.

In the literature to date there is no well-defined notion to what an exit strategy is and, most importantly, there is no unique answer on the principles it should follow. In this thesis the author attempts to identify the determinants of a successful exit strategy and analyse the main challenges policymakers face when designing one. Additionally, the author places a great emphasis on the risks of premature and delayed exits and on the past experiences with this issue.

The results are based, to a large degree, on extensive review of literature, which, due to the recent provenience of the problem and its acute importance, is represented in a big part by central bank authorities' speeches, conference papers and some very recent working papers. Based on the findings in this thesis the author defines the optimal elements of an exit strategy and proposes a monetary exit strategy for the European Central Bank.

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Keywords	Exit Strategy, Unconventional Monetary Policy, Non-Standard Intervention Measures, Monetary Exit

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LIST OF FIGURES

ABBREVIATIONS

CDO	Collateralized Debt Obligation
EA	Euro area
ECB	European Central Bank
EU	European Union
The Fed	the U.S. Federal Reserve System
FX	Foreign Exchange
GDP	Gross Domestic Product
IMF	International Monetary Fund
LTRO	Long-Term Refinancing Operation
QE	Quantitative Easing

MASTER THESIS PROPOSAL

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Proposed Topic:

New Challenges to Central Banking in the Post-Crisis World: Exit Strategy. Case of the ECB.

Topic Characteristics:

To date, three years into the first global financial and economic crisis of the XXIst century, central banks find themselves with significantly expanded balance sheet as a result of the substantial support they provided to the markets through both conventional and unconventional monetary policy tools. As the crisis loses its intensity, new policies need to be designed in order to unwind the significant support so as not to derail the recovery or pose risks to price stability. For this a proper exit strategy needs to be designed.

An important consideration for an exit strategy is the historical experience of crisis management, as it provides policymakers with precedencies. To this end, the experiences of the United States throughout the XXth and especially the Japanese experience of 2000^{s} offer valuable lessons for the current crisis resolution.

Hypotheses:

Problem: Lack of a well-defined notion of exit strategy and principles that it should follow, in the literature, and, more specifically, lack of research on the ECB exit strategy.

Methodology:

The author seeks the solution in an extensive review of literature, which, due to the recent provenience of the problem and its acute importance, is represented in a big part by central bank authorities' speeches, conference papers and some very recent working papers.

Planned outline:

CHAPTER 1. Introduction

CHAPTER 2. Need for Exit Strategy

- 2.1. Intervention measures that call for an exit strategy
  - 2.1.1. Main characteristics of non-standard intervention measures
  - 2.1.2. Why and when should CBs resort to non-standard measures
  - 2.1.3. How are they implemented and when are they needed
- 2.2. European Central Bank's response to the crisis
  - 2.2.1. Overview of European situation
  - 2.2.2. Intervention measures of the ECB
  - 2.2.3. Assessment of ECB's measures' efficiency

CHAPTER 3. Exit strategies

- 3.1. Five questions about the exit strategies
- 3.2. Challenges/problems/obstacles
- 3.3. Key principles

CHAPTER 4. Too early vs. too late

- 4.1. Discussion of costs and benefits of each exit strategy, supported by examples
- 4.2. Too early vs. too late: Economics or Politics

CHAPTER 5. International dimension

- 5.1. Elements of optimal international dimension
- 5.2. International collaboration: Principles elaborated at the G20

CHAPTER 6. Conclusions

CHAPTER I. INTRODUCTION

The global financial and economic crisis, the first crisis in the XXIst century, has put central banks at the forefront of crisis management. The traditional views on monetary policy have been challenged for a change. The old instruments and techniques proved to be no longer sufficient and in a relatively short amount of time new instruments were designed and implemented. First, central banks responded to the evolving crisis by injecting liquidity into the financial system. Later, when the liquidity crisis transformed into a solvency crisis that posed a threat to the stability of the financial system, governments stepped in as they resorted to traditional measures to rescue individual institutions. The central banks, in turn, designed and implemented new intervention measures - all aimed at stabilizing the national and through that the global financial systems, and later on at further loosening the monetary conditions in a near-zero nominal interest rate environment.

As a result, the interventions of central banks and governments have reached such significant quantities, that in order to prevent these measures from producing negative effects on the economy, central banks need to correctly time and implement an exit strategy so as to maintain price and financial stability. To date there is much debate and no unique answer to how an exit strategy should be designed and implemented. This relatively new issue has been widely discussed during conferences, public lectures and in some most recent working papers, nevertheless, an unique or common answer to it is yet to be found.

In this thesis the author attempts to fill the voids in the literature by identifying the determinants of a successful exit strategy supported, among others, by the historical experience, and by detecting the challenges policymakers face in designing one. More specifically, the author focuses on the case of the European Central Bank and, based on the findings in this thesis, defines the optimal elements of an exit strategy and proposes an exit strategy for this central bank.

The structure of the thesis is the following:

Chapter II aims at explaining the need for an exit strategy. First, it discusses the reasons behind the implementation of non-standard intervention measures and implications they bring. Next, it identifies in general terms the intervention measures that call for an exit. Subsequently, the specific response of the European Central Bank is analysed, with a brief overview of the European economic situation, represented by the evolution of five key economic indicators, and

of the measures implemented by the ECB during the turmoil.

While the need for an exit strategy seems to be easily comprehendible, designing one proves to be challenging as it is surrounded by a certain degree of uncertainty and requires taking into account numerous factors. Chapter III gives a comprehensive review of this issue as it attempts to answer the most common questions about exit strategies, define the importance and optimal elements of coordinating the fiscal and monetary exits, as well as coordinating the exits on the international level, and, lastly, tackle the most significant challenges for the policymakers, such as the expanded balance sheet and the anchoring of inflation expectations issues.

Lastly, Chapter IV investigates the time aspect of an exit strategy, as contained both in the future risks from an incorrectly conducted exit and in the lessons drawn from the past experience. With this the author, using also the findings from the previous chapters, identifies in general the optimal elements of an exit strategy and develops an exit strategy for the present, which entails a set of principles that could govern ECB policymakers on the way from the current crisis towards normalcy.

CHAPTER II. NEED FOR AN EXIT STRATEGY

The Global Financial Crisis, which, as some say, transformed into the Global Recession, originated from the sub-prime mortgages and their securitization in the United States and grew so much that it affected almost every economy in the world.

It all started in August 2007, when the prices on the American real estate market started to fall, exposing the poor creditworthiness of many homeowners who, in turn, were granted mortgage loans only because of the deliberate crediting that took place in the precedent years, partly following, or due to, the expansionary monetary policy in the advanced countries. These very subprime loans were afterwards used for creating sophisticated financial instruments, e.g., Collateralized Debt Obligations (CDOs hereinafter), which, in turn, were highly rated by trusted rating agencies and provided high returns in the prevailing market conditions, thus hiding the below-par value of the collateral that was backing these securities. Hence, when the housing prices started to fall in August 2007, the value of these instruments fell as well. In this way, institutions that held many of these instruments were highly affected. For example, Lehman Brothers held large positions in subprime and other lower-rated mortgage tranches when securitizing the underlying mortgages, and now it is known as the largest bankruptcy filing in the US history. Bear Sterns was also heavily involved in mortgage-backed securities trading, and as the market withdrew its money, it became essentially insolvent. In present Bear Sterns is acquired by JP Morgan Chase.

However, not bankruptcy of one institution was the issue, but the systemic risk that the whole economy, and as could be seen later, the whole world, be exposed to it through the widespread use of CDOs. The financial contagion rapidly spread across the financial sector and spilled over to other industrialized and emerging market economies. Central banks became the first line of defense, responding to the evolving crisis by injecting liquidity into the financial system. Later, when the liquidity crisis transformed into a solvency crisis that posed a threat to the stability of the financial system, governments resorted to traditional measures to rescue individual institutions: liquidity lines were granted to insolvent institutions, which in many cases were then sold and merged with a partner presumed to be stronger. The central banks, in turn, designed and implemented new intervention measures - all aimed at stabilizing the national and through that the global financial systems, and later on at further loosening the monetary conditions in a near-zero nominal interest rate environment.

As a result, the interventions of central banks and governments have been so significant, that in order to prevent these measures from producing negative effects on the economy, central banks need to correctly time and implement an exit strategy so as to maintain price stability.

There is a need to define what an exit strategy is at this point.

Taylor (2010) defines exit strategy as,

> *a policy describing how the instruments will be adjusted over time until the monetary framework is reached. It is analogous to a policy rule for the interest rate in a monetary framework except that it also describes the level of reserves and the composition of the balance sheet.*

Additionally, Trichet (2009a), the governor of the European Central Bank (ECB hereinafter), in one of his speeches expressed that

> *an exit strategy is not identical to a particular course of action. Rather, it lays out a framework and set of principles to govern actions in the face of circumstances in whatever form they take.*

Hence, it is safe to state that an exit strategy is a policy with a certain set of principles that governs policymakers on the way out of a crisis, which typically compels them to devise significant interventions, towards normalcy - be it one different from the pre-crisis or similar.

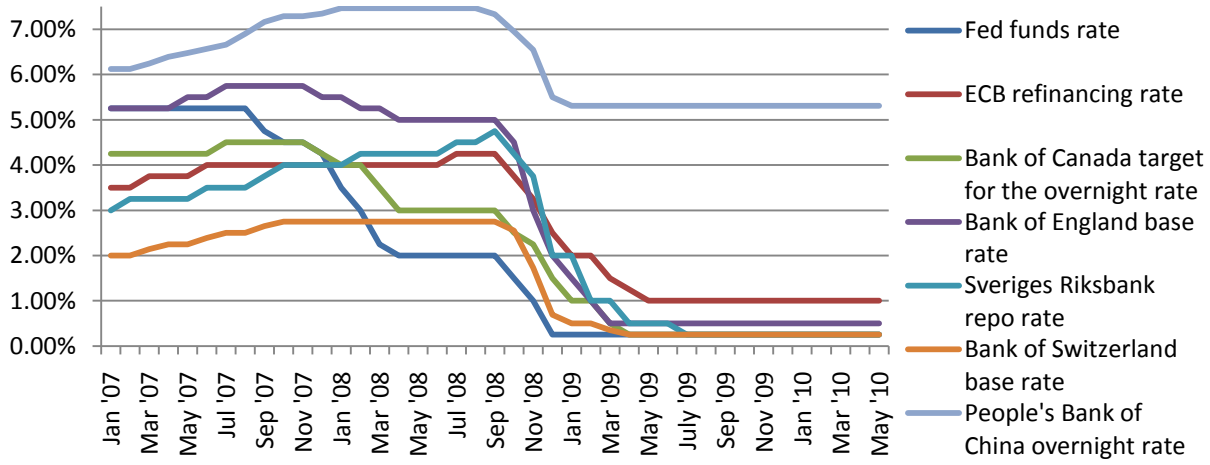
The present chapter aims at explaining the need for an exit strategy. First, it identifies in general terms the intervention measures that call for an exit. Next, it discusses the reasons behind their implementation and implications they bring. Subsequently, the specific response of the European Central Bank is analysed, with a brief overview of the European real economy, represented by the evolution of five key economic indicators, and of the measures implemented by the ECB during the turmoil.

2.1. Intervention measures that call for an exit strategy

In reaction to the crisis central banks used conventional monetary policy instruments along with other liquidity providing tools in order to ensure an effective response. Moreover, amidst the intensification of the financial turmoil six central banks, the US Federal Reserve (the Fed hereinafter), the ECB, the central banks of Canada, UK, Sweden and Switzerland, on October 8th 2008 for efficiency purposes took an unprecedented move by cutting their benchmark interest rates by half a percentage point in coordination (see Figure 1). The Chinese central bank also joined in on this coordinated move, although they cut their policy rate by only 0.27%.

However, responding to the crisis solely with policy rates proved insufficient, and, as the tensions on the global markets intensified, new, non-standard, measures were required in order to properly address the problems caused by the financial crisis and avoid a collapse of the financial markets. Unfortunately, to date there is no approved or tested schedule or a well-known benchmark for moving from standard to nonstandard measures. For example, as Bini Smaghi (2009a) states, a matter to consider is whether non-standard measures should or can be implemented only after the nominal short-term interest rate has reached its lower bound and while downside risks to price stability prevail, or be adopted while interest rates are still positive.

FIGURE 1: COORDINATED CUT IN KEY POLICY RATES BY SIX CENTRAL BANKS



Data source: central banks' websites

This issue has not been covered in the literature so far. Moreover, the experiences of central banks from the past three years convey that the approach to the order of implementing

standard/non-standard measures cannot be summarized into one universal rule, as there are no universal definitions of conventional/standard or unconventional/non-standard measures. More so, central banks might also have different unconventional policy objectives: in some cases unconventional policy is used only for monetary policy purposes, in other cases financial stability might also be targeted.

Changes in refinancing rates represent the primary, also the standard, monetary policy instrument that central banks use in their activity: any change can be easily offset by a contrary move in interest rates. Hence, the use of interest rates does not require any special design of an exit strategy. Contrary to interest rates, the other instruments used by central banks in the current turmoil do require such a strategy. Therefore, the research in this chapter is focused on non-standard intervention measures only.

2.1.1. Characteristics of non-standard intervention measures

The intensity of the financial turmoil at the beginning of its existence has made it difficult for central banks to respond to the financial crisis with the use of their main policy tool - interest rates - only (e.g. Trichet 2009c). The conventional tools could no longer achieve the central bank's objective, so new, unconventional ones had to be introduced, and this posed a number of challenges for policymakers.

First, the unconventional measures consist of a wide range of non-mutually exclusive measures intended to ease financing conditions. According to Bini Smaghi (2009a) this broad range of possible measures, however, implied that central banks needed to, first of all, clearly define the intermediate objectives of their unconventional policies. These objectives could be: supplying extra liquidity to commercial banks, directly targeting liquidity shortages and credit spreads, etc. Only after having the objectives clearly stated, policymakers could decide on the most appropriate measures to meet these objectives.

Second, policymakers needed to take into account the potential side-effects of non-standard measures and, in particular, of any impact they might have on the financial soundness of the central bank's balance sheet and of the threat they may pose to the return to normal market functioning.

Bini Smaghi (2009a) describes unconventional measures as those that "directly target the cost and availability of external finance to banks, households and non-financial companies", and

these sources of finance can be in the form of central bank liquidity, loans, fixed-income securities or equity. If one considers that the cost of external finance is generally at a premium over the short-term interbank rate on which monetary policy normally leverages, the non-standard intervention measures may be interpreted as an attempt to reduce the spreads between different forms of external finance, thus influencing the evolution of asset prices and the flow of funds in the economy. Hence, it is only logical that one needs to take into account the financial structure of the economy, and especially the structure of flow of funds, since the non-standard measures are designed, primarily, to affect the financing conditions.

Central banks have several possibilities of affecting the costs of funds. One of them is to impact real long-term interest rates by influencing market expectations of future inflation. Expectations can affect the real long-term interest rates in several manners. First, they can cause a decrease in the real interest rate if the central bank succeeds in persuading the public to expect a higher price level. More so, an increase in the inflation expectations would also lead to a decrease in the real policy rates, even if the nominal interest rate remained unchanged in the lower bound (e.g., Borio & Disyatat 2009).

The second manner in which expectations can affect the real long-term interest rates is a direct, publicly announced commitment of a central bank to keep its key policy rates at a certain level for a significant amount of time. This commitment translates into the economy according to the rule that, since long-term rates are averages of short-term rates, the entire yield curve tends to get more flat. Additionally, the commitment to keep the interest rates low for a significant period averts a fall in the inflation expectations, which would otherwise increase real interest rates and restrain spending (Eggertsson and Woodford 2003). All in all, a successful expectations manipulation entails reduced long-term interest rates and, thus, boosting lending and aggregate demand.

Another possibility for central banks to affect the cost of funds is to influence the market conditions of assets at different maturities. In this case, according to Bini Smaghi (2009a), central banks have two types of policies at their disposal: either to influence the level of long-term interest rate of financial assets across the board, independently of their risk (typically known as ‘quantitative easing’), or to influence the risk spread across assets between the significantly impaired ones and those that are performing well (known as ‘credit easing’).

The difference between the two measures is that they have different impact on the composition of central bank’s balance sheet. Moreover, as Bini Smaghi (2009d) adds, the credit

easing can be conducted at above-zero-rates, while the quantitative exit is justified only in a situation where the zero lower bound has already been reached. Either way, both operations lead to increases in the size of the central bank's balance sheet. A more detailed presentation of the monetary easing methods is given in the part 2.1.3 of this chapter.

Overall, non-standard intervention measures can be described as those measures that directly target the cost and availability of funds for all economic agents in times when the former are scarce, such as the financial turmoil with its consequent liquidity dry-out. Moreover, depending on the factor they're targeting, non-standard intervention measures can be in the form of quantitative easing or credit easing, with different implications from the two.

2.1.2. Why central banks resort to non-standard measures

As one of the main reasons for using non-standard measures economists name the impaired policy transmission channels (Banque de France 2009). Indeed, during the first two years of the turmoil the monetary policy transmission, as represented, for instance, by the money multiplier, has worsened, as the money multiplier dropped. The main problem, according to Cotarelli & Viñals (2009) is that credit transmission mechanism does not function properly when the economy is facing a liquidity trap[1], and so the use of non-standard measures may lead to a situation where a central bank's balance sheet is extremely expanded, but the bank lending is still scarce. Besides the impaired transmission mechanism itself, the much discussed zero lower bound (e.g. Blinder 2000, McCallum 2000, Svensson 2000) that policymakers face represents another viable reason for using non-standard intervention measures as policy rates cannot be cut lower than zero (thus portraying the liquidity trap mentioned above), and hence forcing to resort to other measures.

For a proper understanding of circumstances in which the use of non-standard measures is needed it is useful to consider the transmission channels, malfunction of which motivated their use in the first place. In normal times central banks use their policy rates to affect the economy through two main channels: the interest rate, and the credit channel. The interest rate channel functions via the yield curve; its level, slope and, most importantly, shape are, thus, very

[1] A liquidity trap is defined as a situation in which the short-term nominal interest rate is zero, Krugman (1998).

important for policy makers. The shape of the yield curve, in turn, is determined by three factors (Banque de France 2009):

- Expected future changes in short-term rates;

The expected future changes in short-term interest rates result in a proportional increase in the long-term rates.

- Uncertainty surrounding these interest rate increases;

This uncertainty is incorporated into the risk premium, which grows whenever there are concerns about the short-term rates, which, in turn, reflects on the long-term rates.

- Also, long-term rates are affected by the supply and demand of securities of different maturities.

The other transmission channel is the credit risk channel, one which is particularly important in the European Union, as here the main source of financing comes from commercial banks. An increase in key policy rates implies more expensive financing for commercial banks, be it short-term – from the money markets, or long-term – from the financial markets. More expensive financing for commercial banks results both in an increase in rates for credits for businesses and households and a decrease in volumes and in reduced access to credit. In this way, monetary policy has an impact on both volume and conditions of credit granted in the economy. However, during the crisis this transmission channel did not perform very well, as commercial banks parked a significant amount of their resources as excess reserves with the ECB, instead of using it in its operations.

Overall, the main reasons for implementing non-standard monetary measures are the impaired transmission mechanism, which did not perform as smooth as prior to the crisis, and the zero lower bound, which both imposed policymakers to implement new set of tools in line with the standard ones.

2.1.3. Types and implications of monetary easing

Most unconventional intervention measures cause an increase in the size of central bank's balance sheet and, consequently, an increase of its monetary liabilities. The simplest way a central bank can change the size and composition of its balance sheet is by participating in direct purchases of assets in the relevant markets, or, in other words, in monetary easing.

Generally, there are three methods of monetary easing (Bini Smaghi 2009a), but the first two are the most common ones:

- Direct quantitative easing;
- Direct credit easing;
- Indirect quantitative/credit easing;

Direct Quantitative Easing

In one of his speeches, the governor of the US Federal Reserve (the Fed hereinafter) Bernanke (2009) defined that,

> *in a pure Quantitative Easing [QE hereinafter] regime, the focus of policy is the quantity of bank reserves, which are liabilities of the central bank; the composition of loans and securities on the asset side of the central bank's balance sheet is incidental.*

Generally, within the QE program a central bank can purchase any assets. Historically, however, it so happened that quantitative easing traditionally engages in purchases of longer-term government bonds. Bini Smaghi (2009a) suggests several reasons for it. First, yields on longer term government bonds serve as a benchmark for pricing riskier privately issued securities. Second, if long-term interest rates were to fall, this would stimulate longer-term investments and hence aggregate demand, thereby supporting price stability.

To this matter, commercial banks play a great role, as they are the ones who ultimately distribute the excess liquidity, received from the central bank for the securities, to the private sector. However, the presence of the excess liquidity does depend directly on the decisions taken by the central bank. That is not to say that commercial banks have no other option than crediting the private sector with the excess liquidity: they can also deposit it with the central bank as a buffer, which would lock in the liquidity provided by the central bank within the financial system.

Bini Smaghi (2009a) states that the risk of the liquidity not leaving the financial system can be reduced if the central bank implements this kind of operation, but only when it has fully exploited the standard interest rate channel, as commercial banks have little incentives to deposit money with the central bank. He also adds that a QE policy rate above the lower bond poses

threats, as it requires a more significant growth of the central bank's balance sheet, and, thus, increases the risk exposure of the central bank.

The financial system indeed plays an important role here. Moreover, Caballero, Hoshi and Kashyap (2006) insist that it plays a crucial role for the success of a quantitative easing policy. Central banks' ability to transfer the extra liquidity to the non-financial sector may be an abundant predicament to the quantitative easing or a great support. The authors state the success of the QE depends on whether it managed to narrow the market spreads between the rates paid on certain credit instruments and policy rates, thus preventing the possibility of a market liquidity shortage and preserving the banks' risk appetite.

Third, as one of the probable effects of the QE Bini Smaghi (2009a) names the flattening of the yield curve at longer maturities, which eases the credit conditions for the private sector. However, the more significant considerations in this case are the real interest rates and, thus, the inflation expectations, as they have a significant impact on investment and spending decisions. Normally, one would expect the increase in money supply to have a large impact on inflation expectations, however, according to Krugman (1999), these consequences are possible only when the increase in the balance sheet is not only significant but is also perceived by the public as permanent.

Fourth, increasing the inflation expectations in a significant way and at the same time avoiding an upturn in the nominal long-term interest rate with some time lag proves to be rather difficult. In an economy with developed financial markets it is quite challenging to set the real long-term interest rate as the operational target for monetary policy.

Fifth, if the QE is perceived to be long lasting, then Bini Smaghi (2009a) states that it could also have an expansionary effect by relaxing fiscal constraints, which can serve as an effective tool of stimulating aggregate demand, and, moreover, purchases of long-term government debt can thus contribute to strengthening fiscal effects:

i) by accommodating the supply of governments bonds,

ii) by affecting the long-end of the yield curve - the risk premium - and

iii) by re-anchoring inflation expectations to a positive target.

Finally, a government bond-purchase programme encompasses the risk of accruing substantial losses for the central bank. Since the Government bonds are acquired at rather high prices and sold at lower prices, considering that the easing measure was successful (the

succeeding economic recovery would cause a rise in long-term interest rates, which would bring down government bond prices) - the central bank would eventually face losses.

Direct Credit Easing

Bini Smaghi (2009a) defines credit easing as

> *a policy that directly addresses liquidity shortages and spreads in certain (wholesale) market segments through the purchase of commercial paper, corporate bonds and asset-backed securities. The effectiveness of measures, which are aimed at wholesale financial markets, depends on their importance in the financing of households and firms, which varies considerably from country to country.*

Thus, credit easing differs from quantitative easing mainly in that the former involves financing of commercial paper, corporate bonds, whereas the quantitative easing assumes purchases of government bonds. In terms of the impact on the money supply or the monetary base the purchase of privately issued securities does not differ much from the purchase of government bonds. However, purchasing privately issued securities indicates that the central bank cooperates with the private sector and is thus opening to credit risk and affects the risk profile of its balance sheet. To keep the financial independence of the central bank uncompromised, central bankers need to cautiously evaluate the eligibility of all assets in terms of the implications they could have for the risk exposure of its balance sheet.

In addition, there is a dire need to prevent allocative distortions in terms of industries, companies, sizes of companies or locations, which can be achieved by a thought-out calculation. If one considers the varying development of corporate bond markets in different countries, it could be difficult for central bankers to use the outright purchases of privately issued securities as a tool. Notably, the direct credit easing has been extensively used by the Fed during the current crisis.

Indirect Quantitative/Credit Easing

The measures described above involve direct acquisition by the central bank of various assets, in exchange for central bank money. This infers that the central bank holds the assets until maturity or resale and, accordingly, keeps the risk on its balance sheet. Indirect quantitative/credit easing, instead, is another way to increase the size of the balance sheet, and, namely, by lending

to commercial banks at longer maturities against collateral, which includes assets whose markets are temporarily impaired. This policy affects directly the yield curve over the horizon at which policy operations are conducted or committed to be conducted (Bini Smaghi 2009a). Moreover, this author suggests that it is possible to extend the horizon of the yield curve, which is affected, to the extent that the central bank promises to conduct such type of tenders for a certain period of time. For example, if the central bank promises to conduct 6 months refinancing operations with fixed rate tenders for two years, the yield curve over the two and a half year horizon will most probably be influenced. However, according to Krugman (1999) the increase in the monetary base is determined endogenously within the banking system and it depends on the state of stress, or liquidity preference, characteristic to it.

Another feature of this kind of policy is related to the quality of the collateral. By broadening the range of the collateral accepted for the refinancing operations, the policymakers simplify the financing conditions by banks to these sectors. The latter is then reflected in the credit spreads in the corporate sector. This procedure also allows the counterparties of the central bank to select the collateral in their refinancing operations. It is a common practice for commercial banks to use a greater amount of assets of a lower quality when the markets are distressed. The total collateral placed with the central bank differs endogenously, and it depends on the state of stress of the financial markets (Bini Smaghi 2009a). The eligibility of some categories of assets for monetary policy operations simplifies their formation and trade among market participants.

Monetary easing in all its forms is the measure that poses the challenges and difficulties for an exit. The challenge is in that by purchasing debt securities, be it government bonds or commercial debt, central banks not only increase their balance sheet size, but also take on higher credit risk, thus increasing the possibility of central bank losses. The difficulty lies in the decision whether to hold the securities on the balance sheet until they mature, to sterilize surplus liquidity in the future or to dispose of them prior to maturity: if so, a one-off disposal risks creating potential market disruptions, whereas a gradual release may not go in line with central bank's objectives. The indirect quantitative/credit easing is somewhat less complicated as the disposal of collateral assets occurs naturally at the end of the lending term. However, together with the direct quantitative and credit easings it also contributes to the exposure of the central bank's balance sheet to heightened credit risk.

2.2. European Central Bank's response to the crisis

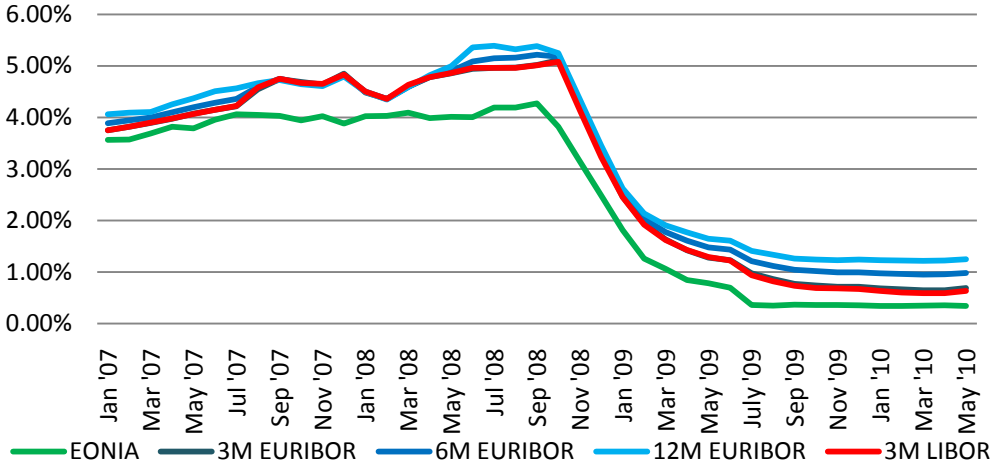
Along with other central banks, the European Central Bank took active part in crisis prevention from the very first start of market tensions. The ECB did so by implementing a specific set of unconventional measures, which, as previously seen, requires an exit at a certain point in time, regardless of its contents.

2.2.1. Overview of the economic situation in Europe

The consequences of the financial crisis have been significant throughout the whole world; in this it was indeed a global financial crisis. Recent studies suggest that past episodes of financial distress have resulted in sizeable output losses that are never entirely recovered (e.g., IMF World Economic Outlook 2009, Furceri & Mourougane 2009). Estimates emerging from econometric work by the European Commission and simulations with its QUEST model put the potential output loss of the European economy at up to 5%. Moreover, as Székely and van den Noord (2009) state, a reversal of financial development may weaken the incentives for structural reform, thereby adversely affecting potential growth further.

The tensions in the financial markets were the first to signal the financial crisis. The massive exposure to toxic assets, the chain of high profile bankruptcies and the lack of transparency have contributed to, among other things, heightened counterparty risk, and lead to liquidity dry-out. This reflected in sharp decreases of the Euro interbank rates (see Figure 2).

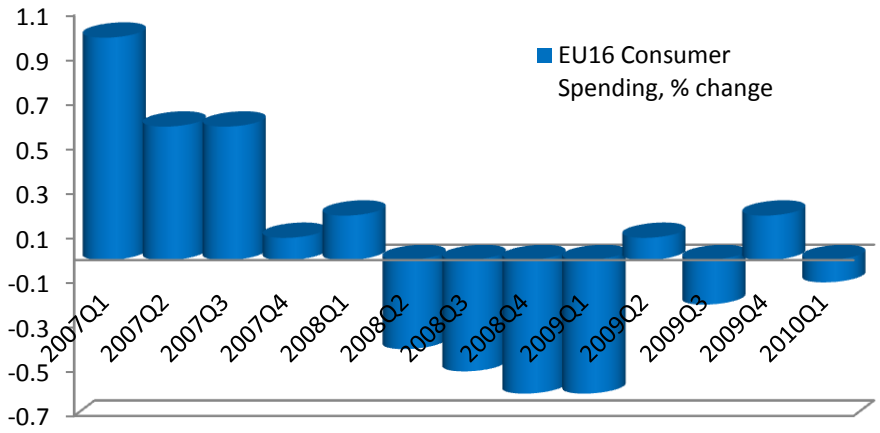
FIGURE 2: EURO INTERBANK RATES ACROSS THE MATURITY SPECTRUM



Data Source: ECB Statistical Data Warehouse

The tensions in the financial markets soon reflected on the real economy. In this respect, one of the first effects of recession is the impact it has on the spending habits of customers: they start saving more for the upcoming period of depression. To this point, the European consumer spending (see Figure 3), indeed, behaved accordingly.

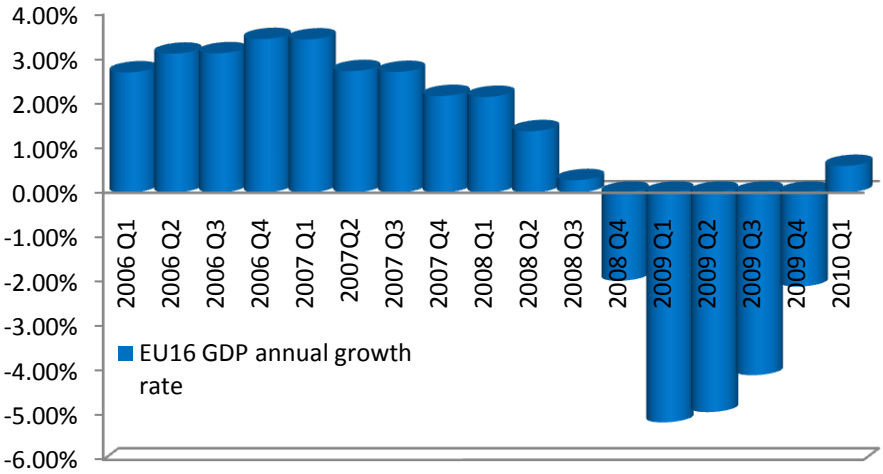
FIGURE 3: EURO AREA CONSUMER SPENDING, Y/Y CHANGE



Source: Eurostat, Statistical Office of the European Commission

Another indicator that displayed contraction was the gross domestic product (GDP hereinafter) was also among the first indicators to display contraction in Europe. From July 2007 the Euro Area (EA hereinafter) economic growth had exhibited a slowdown, and later, in the end of 2008 it became negative and continued to decline until 2010 (see Figure 4). In 2010 the growth became positive, however it is still too early to consider it a real recovery, as it could be only the result of the massive financial support provided by the authorities.

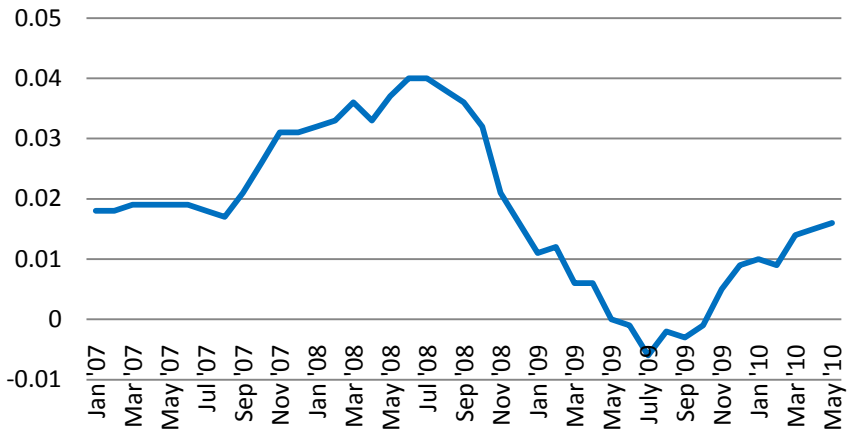
FIGURE 4: EURO AREA GDP GROWTH RATE



Source: ECB Statistical Data Warehouse

More so, the inflation in the Euro area, was growing until mid-2008, and then followed a year-long decline to negative values. The inflation started to recover in August 2009, about a quarter later than the GDP growth (see Figure 5).

FIGURE 5: EURO AREA INFLATION RATE



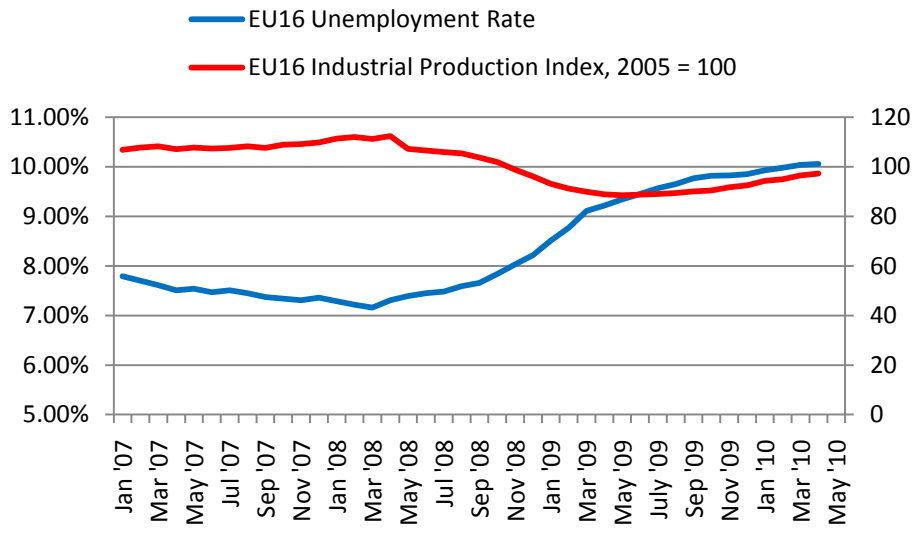
Source: ECB Statistical Data Warehouse

Unemployment is another indicator that undergoes significant changes during turmoil and the following recessions.

In some countries of the Euro area to date lower levels of activity were mirrored mainly in shorter working hours fostered by employment support schemes that have limited the increase in headline unemployment statistics. This is true for Germany and a few other countries, but not in general. Figure 6, in fact, shows a sharp increase in unemployment for the EA average. The relatively subdued unemployment response may partly be the result of past labour market reform, but this is not uniformly the case in all member states. For instance, in Spain in March 2010 unemployment reached a drastic 20% level, whereas in Germany it was 8.5%. As for the Euro area average unemployment rate, it was increasing all the way from March 2008 and hit all time high values by crossing the 10% mark in March 2010.

The significant increases in unemployment rates were in line with the declines in the industrial production and with the usual time lags (see Figure 6), although, the industrial production ceased to decline in mid-2008 and has been slightly increasing ever since, whereas the unemployment continued its path with no change.

FIGURE 6: EURO AREA UNEMPLOYMENT AND INDUSTRIAL PRODUCTION INDEX



Source: Eurostat, Statistical Office of the European Commission

To date, due to slight increases in some macroeconomic indicators, e.g., the GDP growth rate, the inflation rate, the industrial production, it is believed that the recession might be slowly easing. However, it is still too early to draw conclusions, especially since other indicators, such as the unemployment rate, the consumer spending etc., are still declining.

2.2.2. European Central Bank intervention measures

Unlike the Fed, the ECB did not initially adjust its policy rates when the crisis started in the second half of 2007. In fact, after keeping rates constant for a couple of months it increased its rate from 4 percent to 4.25 percent in July 2008. The ECB started cutting rates in October 2008, and from then to May 2009 the ECB reduced its refinancing rate by 325 basis points and held it constant ever since (see Figure 1).

The European Central Bank was among the first central banks to introduce non-standard measures in their crisis management, which they call "enhanced credit support". As Trichet (2009b) stated, the ECB's enhanced credit support comprises five elements[2]:

- the full allotment of banks' demand for liquidity at fixed rates;
- the provision of liquidity in foreign currencies;
- the expansion of the list of assets accepted as collateral;

[2] These measures, however, may not be non-standard for some other central banks.

- the lengthening of the maturity of liquidity provision;
- the direct purchase of covered bank bonds.

At the onset of the crisis in August 2007, the ECB quickly reacted to the market developments and accommodated the increased liquidity demand through a fixed rate operation with full allotment, providing €95 billion to the market within a few hours. In the next three days they provided overnight crediting with the same conditions. In regards to interbank spreads, this operation had limited success (see Figure 7). From that time onward they used a new "fixed rate full allotment" auction procedure and also increased the maturity of their operations. In January 2008 the volume of their outstanding refinancing operations reached €850 billion. In January 2007, before the outburst of the crisis, this volume was €150 billion.

FIGURE 7: EURO 3-MONTH LIBOR – 3-MONTH EONIA SWAP INDEX

Data Source: www.euribor.org, ECB Statistical Data Warehouse

In June 2009 they performed the first one-year liquidity providing operation, supplying banks with credit against securities at 1% for one year. They had a record allotment of €442 billion in this operation. Two months later, they supplied banks with €75 billion, again at an interest rate of 1% for one year. Currently the liquidity provided by these operations stands at about €700 billion (as of June 2010). In December 2009 they conducted, what was then believed to be the last, 6-month liquidity providing operation at same 1% rate. However, in light of the tensions due to fiscal positions of some European countries, ECB performed another 12-month refinancing operation in March 2010, and, more so, announced a 6-month long-term refinancing operation (LTRO hereinafter) for June 2010 and a fixed rate tender procedure with full allotment in the regular three-month longer-term refinancing operations.

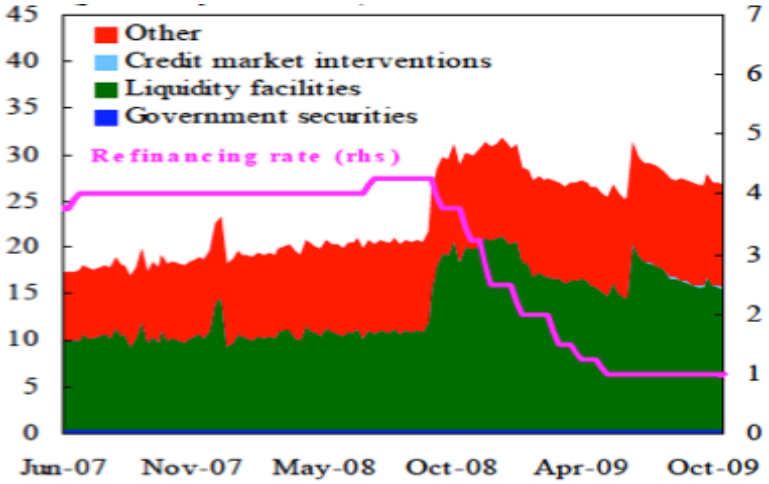
Since October 2008 they have moreover provided liquidity in foreign currencies, most notably US dollars, also following the "full allotment fixed rate" procedure. In December 2007, the Eurosystem started to provide US dollar against their standard euro collateral set. In October 2008, the Eurosystem expanded the provision of liquidity in selected foreign currencies, by offering in principle full allotment. In addition, they started to provide their counterparties with Swiss franc denominated liquidity. The provision of foreign currency was refinanced through foreign exchange (FX hereinafter) swap agreements between the major central banks, which was an unprecedented fact in central banking history and illustrates the very effective co-operation between major central banks over the past two years as well as the willingness to enter new modes of liquidity support to banks. Similarly to the LTROs, the swap operations were also planned and discontinued in December 2009, so that to resort to them again in May 2010.

Additionally, since July 2009, they intervened directly in the longer-maturity segments by buying covered bonds to revive market that was an important source of funding for banks. The covered bond market suffered from the financial crisis, both in terms of primary and secondary market activity. The total sum allocated to the purchase programme – €60 billion (or ~5% of the outstanding eligible covered bonds) – was considered necessary for significantly supporting activity in this important market, ensuring that the ECB acts as a catalyst for re-activating this market rather than as a market maker of last resort. To date, the ECB has purchased almost €60 billion worth of covered bonds, thus achieving the goal of the programme.

Another very important nonstandard measure, which is part of the enhanced credit support as well, was the enlarged list of assets eligible for collateral. In this list government securities account for only 44% of the nominal value of securities, the rest are private securities, which the ECB started accepting even more in the crisis. The total value of these 45,000 securities by the end of 2010 was €12.2 trillion. This amounts to 86% of all debt securities issued in euro and to 130% of GDP in the euro area. According to Trichet (2009c), this very ample eligibility of collateral has dramatically eased banks' liquidity constraints during the crisis and, ultimately, it has encouraged them to extend new credit or continue rolling over maturing loans. In addition, to fully exploit all these measures, the ECB enlarged the number of counterparties in the refinancing operations from 1,700 before the crisis to 2,200.

The interventions in the Euro area up to end-2009 can be summarized in Figure 8:

FIGURE 8: EURO AREA INTERVENTION MEASURES (% OF 2008 GDP)

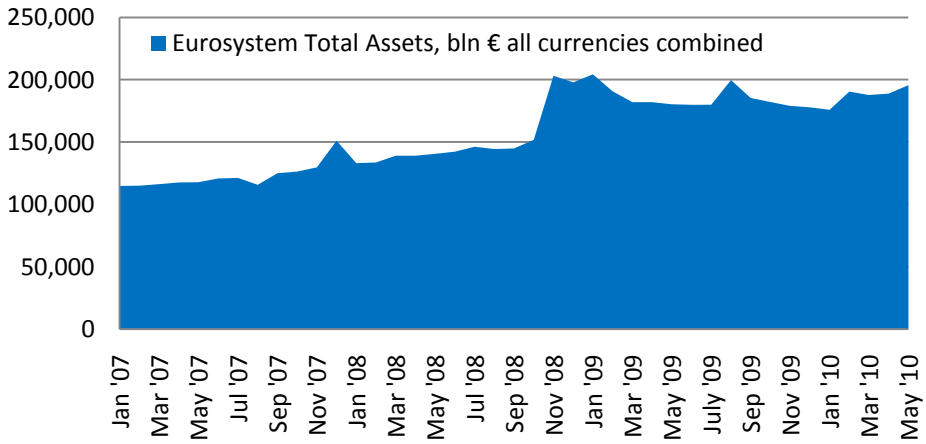


Source: Reinhart & Rogoff (2009)

Clearly, the unconventional measures the ECB employed have its consequences. To this matter, the balance sheet of the central bank expanded significantly.

The sharpest increase in the central bank balance sheet occurred at the beginning of the most intense part of the financial crisis, in autumn 2008. There had been fairly small balance sheet expansion until the fall 2008. Before that, the focus was on changing the composition of the asset side of the balance sheet rather than increasing its size. In June 2007, prior to the financial turmoil total assets of the Eurosystem amounted to around 10% of area-wide GDP (€913 billion). By January 2009, the size of the balance sheet had almost doubled, reaching 19% of GDP (€1,763 billion), by September 2009 it equalled 16% of GDP (€1,454 billion), and currently it stands at €2,098 billion, or 22% of GDP (See Figures 8 and 9).

FIGURE 9: EUROSYSTEM BALANCE SHEET SIZE

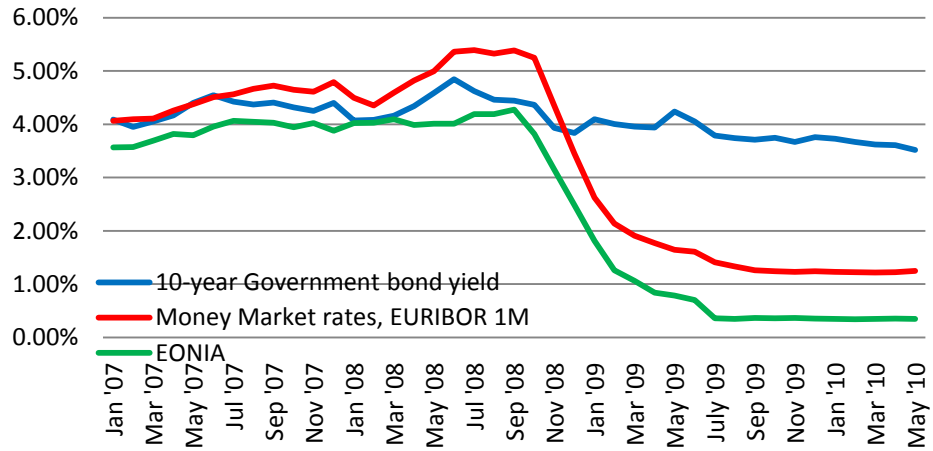


Source: ECB Statistical Data Warehouse

As mentioned above, in December 2009 the ECB planned to start with the exit, as they discontinued the foreign currency liquidity providing swap operations and performed the last, as announced at the time, 6-month LTRO. However, that exit was later reversed, as the ECB reintroduced the swap facilities with the Federal Reserve System, in coordination with the Bank of Canada, the Bank of England, the Swiss National and the Bank of Japan in May 2010. The ECB also performed a 6-month LTRO on May 12th 2010 and announced future 3-month operations. Moreover, amidst intensification of market tensions due to fiscal concerns affecting the yield-spreads among euro area public and private debt instruments, the ECB initiated the Securities Markets Programme, which involves purchasing government bonds on the secondary market. As of June 24th the ECB purchased government bonds in the amount of €51 billion. This decision of the ECB, meant to "address the malfunctioning of securities" has stirred controversial reactions, as it gets very close to the European Treaty's prohibition of purchasing government debts on primary markets, as well as of directly financing governments by the Euro area central bank.

The medium-term effect of the intervention measures undertaken by the ECB can be, to some extent, seen in the development of Government bond yields, which are slightly but surely decreasing since Spring 2008. Money market rates, as represented by the 1-month EURIBOR, display their short-term effect (see Figure 10). The shortest-term effect can be seen in the evolution of the overnight rate, EONIA, which in the second quarter of 2009, fueled by the extensive liquidity supply by the ECB, dropped much below the money market rate. The long-term effect of the intervention measures, however, is still to be seen.

FIGURE 10: MEDIUM- AND SHORT-TERM EFFECT OF ECB NON-STANDARD MEASURES



Source: ECB Statistical Data Warehouse

By and large, assessing the unconventional measures of the central banks in general, and the ECB in particular, is a rather difficult task. There are numerous considerations to take into account, such as analyzing the context in which they were implemented, the effect on the problem they were meant to solve, and their potential side effects.

To this point, the context of their implementation, as explored in this section, suggests that the use of the non-standard measures was indeed justified, as the use of the interest rate tool proved insufficient during the financial turmoil. The effects of these measures proved broadly positive, as the ECB, overall, managed to improve the conditions on financial markets by supplying significant amounts of liquidity in fixed-rate-full-allotment procedures, LTROs, foreign currency swap facilities and by accepting an enlarged list of collateral within their enhanced credit support programme. However, this program has also led to a significant expansion in the central bank's balance sheet. This side effect is rather complex, it is difficult to draw a strong conclusion about it based only on the evidence presented in this chapter. For this purpose, it is given a more detailed attention in the following chapter, part 3.4.1.

CHAPTER III. EXIT STRATEGY AND ITS CHALLENGES

The global financial and economic crisis that started in 2007 has had undeniably deep implications for the world economy as discussed in the previous chapter. Most of the central banks, including the ECB, had to step in and actively take part in preventing the crisis with first reflections in money market tensions from becoming a collapse of the entire financial system. The interventions of central banks and governments aimed to minimize the negative consequences of the crisis on real economy had been so significant in volume and diversity, that in order to prevent negative effects from these very intervention measures and maintain price stability a proper exit strategy needs to be developed, communicated and implemented. While the need for an exit strategy seems to be easily comprehendible, designing one proves to be challenging as it is surrounded by a certain degree of uncertainty and requires taking into account numerous factors.

The present chapter gives a comprehensive review of this issue as it attempts to answer the most common questions about exit strategies, define the importance and optimal elements of coordinating the fiscal and monetary exits, as well as coordinating the exits on the international level, and, lastly, tackle the most significant challenges for the policymakers, such as the expanded balance sheet and the anchoring of inflation expectations issues.

3.1. Five common questions about exit strategies

The following section is built around five most common questions about exiting from non-standard monetary policy intervention measures. First, the "source" aspect, or the situation that calls for an exit, is assessed. For that, a short summary of the European Central Bank's approach (based to a large extent on Chapter II but also with new relevant information) to non-standard monetary policy is presented. Next, the author discusses in detail the reasons for exiting as well as the possible consequences of a protracted accommodative policy. The issue of post-crisis "normalcy" is addressed in the following part by reflecting on the state to which these exit strategies are bringing and on the likely future of monetary policy after their implementation. Further, the present author establishes the most important principles of designing and implementing an exit strategy and presents the specifics of withdrawing of the non-standard intervention measures. Finally, this section concludes with a brief presentation of the exit timing

issue, which, due to its importance and difficulty, is given more attention in the last chapter of this paper.

Whence?

After the escalation of the financial crisis in the fall of 2008 inflationary pressures quickly receded, pushing the European Central Bank to engage in extensive monetary easing to mitigate the risk of systemic illiquidity in the European banking sector (for a review of the ECB's unconventional monetary policy see Chapter 2).

Below the main unconventional measures used by the ECB and their implications are listed.

- "Fixed rate full allotment" auction procedures and conduct of additional longer-term refinancing operations (including first-time six- and twelve-month refinancing operations);

The outstanding amount of long-term refinancing operations increased from €150 billion in June 2007 to almost €900 in July 2009 after a massive €442 billion refinancing operation. Currently the liquidity provided by these operations stands at about €700 billion (as of June 2010). The wide use of the fixed rate full allotment and longer-term refinancing operations had an offsetting impact on the regular main refinancing operation, which currently accounts for only €71 billion, or 9%, of the liquidity provided by the ECB to the Euro area banking system, whereas in the first half of 2007, before the onset of the credit crisis, it accounted for an average of €290 billion, or 67%, of liquidity[3].

- Enlarged list of assets eligible as collateral;

Government securities in this list account for only 44% of the nominal value of securities, the rest being private securities, with a total value of €12.2 trillion as of the end of 2009. This amounted to 86% of all debt securities issued in euro and to 130% of GDP in the euro area in that period.

- Covered bond purchases;

The Eurosystem bought covered bonds for a total of €58,213 billion as of June 17th and, thus, is reaching the volume of €60 billion for end of June that was announced by the ECB at the start of this programme.

- The temporary swap agreements;

[3] www.alliancebernstein.com, accessed on March 13th, 2010

These swap lines where conducted by the ECB and other central banks to facilitate the provision of foreign currency liquidity until January 2010 when they were discontinued due to improvements seen in the functioning of financial markets. However, on May 9th 2010, in light of the fiscal tensions in the euro area, the ECB re-established these swap facilities with the Federal Reserve System, in coordination with the Bank of Canada, the Bank of England, the Swiss National and the Bank of Japan.

- Purchases of government bonds;

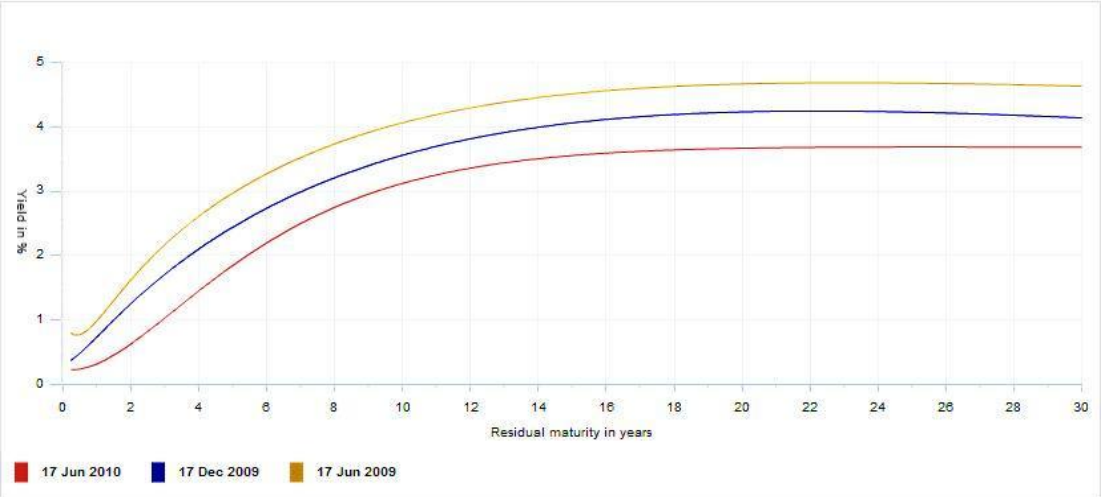
In May 2010, amidst the intensification of market tensions due to fiscal concerns about certain European countries, the ECB initiated the Securities Markets Programme, which involves purchasing government bonds. As of June 24th, the ECB purchased government bonds in the amount of €51 billion. The ECB officials explained that this programme was designed "to ensure the effective functioning of the monetary policy transmission mechanism by helping to resolve a malfunctioning of some segments of the euro area debt securities market"[4] and was not to be confused with quantitative easing as these purchases are to be sterilized. However, as the impact of this measure on the functioning of financial markets is yet to be determined, the market confidence in the ECB as an inflexibly independent institution was shattered.

The reintroduction of some previously discontinued measures, such as the swap lines, the 6 months and 12 months long-term refinancing operation, and the introduction of new ones, such as government bond purchases within the Securities Markets Programme, implies that the exit from the ECB's unconventional monetary policy will be even more gradual than initially projected. Moreover, the downward shift of the yield curve (see Figure 11), indicates that also the market expectations were adjusted accordingly and now lean toward a more gradual exit as well.

In June 2007, just before the start of the crisis, as González-Páramo (2009) notes, total assets of the Eurosystem amounted to around 10% of area-wide GDP (€913 billion). By January 2009, the size of the balance sheet had almost doubled, reaching 19% of GDP (€1,763 billion), by September 2009 it equaled 16% of GDP (€1,454 billion), and currently it stands at €2,098 billion, or 22% of GDP.

[4] Introductory statement with questions and answers with J.-C. Trichet at the June 10th 2010 press conference in Frankfurt am Main http://www.ecb.int/press/pressconf/2010/html/is100610.en.html#qa

FIGURE 11: EURO AREA YIELD CURVE, AAA-RATED EA CENTRAL GOVERNMENTS BONDS, ALL MATURITIES



Source: ECB Statistical Data Warehouse

The impact of the ECB's intervention measures, however, is difficult to assess at this stage, nevertheless, there are some signs that the effects they have had are of positive nature. More specifically, there exists a significant decrease of the market spreads between unsecured term interest rates and overnight interest rates swaps within the last year (see Figure 6 in Chapter II). Combined with the main refinancing rate cuts, this led to a significant decrease of interest rates on loans to households and firms. Nevertheless, growth in aggregate lending has not shown positive signs yet: moreover, according to the ECB's Bank Lending Survey (April 2010), the net demand in the first quarter of 2010 has weakened, whereas in the previous quarter it was expected to be positive. More specifically, the demand for loans to enterprises has decreased by 13%, as against 8% decrease in the previous quarter, also the demand for loans to households weakened by 2%, down from 16% in the previous quarter.

Why?

As previously seen, central banks around the world, and the ECB in particular, engaged in unprecedented monetary accommodation implemented through both conventional and unconventional tools, such as those used in the ECB's enhanced credit support programme. While these measures so far proved to be beneficial and effective (García-Cicco 2010; Klyuev & de Imus & Srinivasan 2009), a similar further approach may become excessively accommodative and impose upward pressure on the price level. Recall that "inflation is always and everywhere a

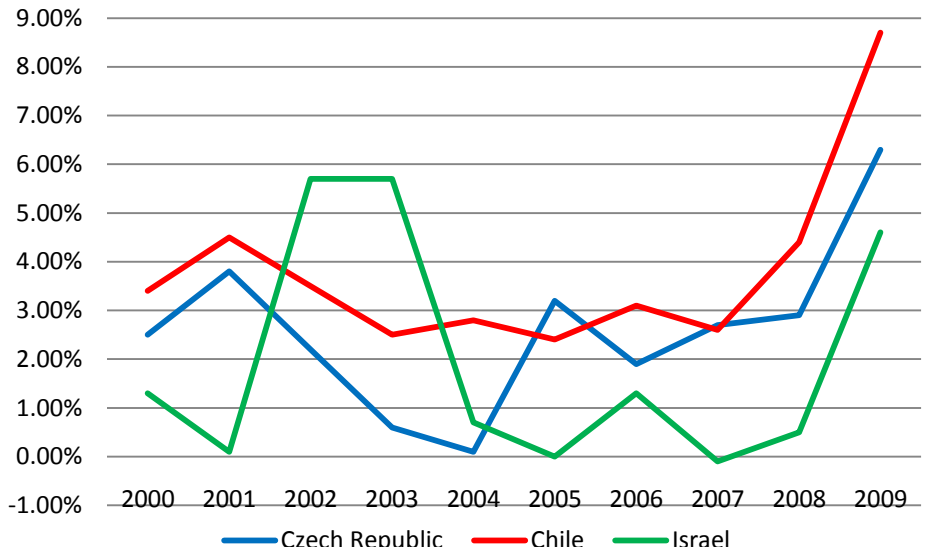
monetary phenomenon" (at least in the long run), as Milton Friedman (Friedman&Schwart 1960) once stated.

The policies implemented by most advanced countries including the ECB during the 2007-2009 turmoil considerably expanded the monetary base, and thus are viewed as potentially inflationary. The possible sources of inflation risk, according to Baudchon (2009), are:

- activity overstimulated by hyper-accommodative monetary policy;
- excess liquidity in the banking system;
- potential deanchoring of inflation expectations (linked to the excess liquidity).

It is clear that the excessive monetary accommodation is not the normal stance of the ECB's monetary policy and hence must discontinue at a certain time. However, an excessive supply of liquidity does not necessarily imply risks to price stability or improper functioning of the monetary policy, as there are examples of countries with long-term liquidity surplus *and* with low levels of inflation, such as the Czech Republic, Israel, Chile, etc. The examples of these countries suggest that as long as the central bank has the technical ability to sterilize the liquidity surplus, this surplus does not pose threats to a successful monetary policy implementation and price stability, in particular, as these central banks have shown to be able to keep their interest rates and, most importantly, inflation under control (see Figure 12).

FIGURE 12: AVERAGE YEARLY INFLATION IN CHILE, ISRAEL AND THE CZECH REPUBLIC



Data source: www.indexmundi.com

However, in the euro area, unlike the aforementioned countries, long-term liquidity deficits are more common, and hence any prolonged liquidity surplus may pose risks to price stability. In fact, if no interest rate increases and no credit-support withdrawal take place when the economic activity shows significant signs of revival,

> *the monetary stance may become excessively accommodative as soon as the income velocity of money is increasing again in the wake of less uncertainty, thereby giving rise to risks to price stability* (Belke 2009).

Hence, the central bank must withdraw the monetary stimulus injected into the system in a timely manner (e.g., Baudchon 2009, Borio and Disyatat 2009, Cottarelli and Viñals 2009). The volume and the impact of this very monetary stimulus causes the primary motivation for exit strategy - avoiding inflation (Buiter 2009, González-Páramo 2009a). For the European Central Bank, whose primary objective is price stability, an exit strategy, for that matter, represents a crucial part of the post-crisis monetary policy conduct.

Past cases of prolonged accommodative monetary policy, more so if they are implemented on a global scale, show that this policy can lead to an overly easy access to credit in international financial systems. In turn, easy access to credits can have a downward pressure on interest rates across the maturity spectrum and bring to extremely distorted financial asset prices due to increasingly speculative behavior by the market agents. Hence, precluding an extended excessively accommodative monetary policy is crucial not only for maintaining price stability, but also for avoiding the occurrence of financial imbalances that can, if extendedly present, bring to incidences of macroeconomic instability (González-Páramo 2009a).

Moreover, in regards to the accommodative policy and a subsequent exit strategy, the policymakers face the biggest challenge in finding a way to preserve the beneficial effects of the massive monetary stimulus *while* keeping the long-term private sector inflation expectations firmly anchored. On the contrary, as González-Páramo (2009a) states, the volatile inflation expectations would cancel out any beneficial effect the monetary stimulus had on the economy by a range of adverse factors, including increased inflation risk premia, interest rate volatility and Ricardian effects on consumer spending.

Besides these considerations of a more macroeconomic nature, other reasons, related to distortions in the functioning of markets and the behaviour of individual agents, are worth mentioning.

1) Commercial banks may be too comfortable with a prolonged supply of central bank liquidity, which can distort their motivations to resume interbank lending.

2) The enlarged range of public and private securities which were accepted as collateral during the turbulent times will represent a challenge for the central banks once the economy stabilizes and they decide to place them back with investors as these securities will need to meet investor standards. In this regard, the central banks will need to put efforts into improving transparency, simplicity and the degree of standardisation of transactions (González-Páramo 2009i).

3) The massive credit support by the central banks may give rise to the moral hazard issue, as commercial banks receive almost unlimited liquidity on similar terms.

Whither?

Having discussed the originating situation and the reasons for exit strategies it is only logical to discuss the direction towards which the current monetary policy is headed, i.e., the "normalcy" of the post-crisis economic environment.

There is significant empirical evidence showing that financial crises tend to have large and long-standing costs in terms of output and employment and tend to be followed by persistent declines in asset prices (Reinhart and Rogoff 2009). In regards to the latest financial crisis it is apparent that its cost in terms of lost financial, physical and human capital all over the world can be very significant. In this way, the long-term impact of the current crisis could result in decreased level of output **(**Furceri & Mourougane 2009) for a number of economies, including the euro area. To this point, González-Páramo (2009b) brings the example of another complication inherited by central banks from the crisis - the heightened state of uncertainty and reduced reliability of the monetary policy makers' conventional information set.

Looking ahead, as the economic situation stabilizes, the unconventional monetary policy will not be required to the same extent. Hence, there will most probably be a situation in which the main operational features that were functioning properly prior to the crisis are restored, and the lessons learned from the crisis are taken into account (Cottarelli and Viñals 2009).

For the ECB this situation has the following characteristics:

- the one-week main refinancing operation is the main tool for steering money market rates;
- the bank acts as "rate-taker" in the longer-term money market (Stark 2009);

- no liquidity provision in foreign currency;
- no use of self-originating paper as collateral under normal market conditions (González-Páramo 2009b);
- and no buying of government bonds.

More generally, the reliability and efficiency of inflation targeting regime followed by many central banks in advanced economies as monetary regime might be questioned in the view of financial turmoil. The prevailing view is that prior to the crisis this policy regime functioned quite well and managed to deliver significant results, making the clear numerical target, combined with framework of transparency and accountability impose discipline on the monetary policy implementation (Dale 2009). No matter how successful inflation targeting may seem, it is most likely to undergo some adjustments. The current attempts of monetary policy innovation tend to introduce "improvement" of this regime, with financial stability as an additional target (e.g. Marinković and Radojičić 2009).

How?

Another very important issue imposed by exit strategies is the mode in which they are to be introduced, in other words, how a central bank should reduce the volume of money supply and withdraw credit easing in order to prevent inflation.

There is a general belief that policy makers need to follow the principles of timeliness and gradualism (e.g., Baudchon 2009) when designing and implementing an exit strategy. Undeniably, as also Bini Smaghi (2009c) states, the "normalization" of monetary policy can be successful only when it is directed in line with gradual improvement in economic and financial conditions.

As for the ECB, its officials clearly stated that their interest rate decisions will be based merely on the bank's assessment of the risks to price stability, while decisions on enhanced credit support will be based on financial stability and market functioning considerations (Stark 2009). For central banks with short-term interest rate as the main policy tool, tightening the stance of monetary policy is therefore straightforward: it can be done either by increasing main policy rates, or through a tighter liquidity supply, or through a combination of both. As for rolling back the non-standard measures, it is helpful to differentiate between the main types of non-standard measures.

First, the non-standard refinancing operations are relatively easy to withdraw due to the fact that they have a pre-defined maturity, beyond which these operations are naturally liquidated or can be substituted by standard ones, if required.

Second, the foreign currency non-standard refinancing operations (similarly to the domestic currency ones), including the longer-term ones, can be discontinued if they are considered no longer needed, thus providing a natural exit from them.

Third, in regards to the enlarged collateral framework, no particular exit design is required in this case because the central banks including the ECB announced at its first introduction that it would have only a temporary status, hence the exit can be easily enforced by any bank whenever it is deemed necessary. In the ECB's case this was initially announced for December 2010, due to the 12-month refinancing operation on December 2009, however, that plan was later reversed, as the ECB further eased the monetary policy in the wake of the European debt crisis and reintroduced the longer-term refinancing operations.

Lastly, the covered bond and the recently acquired government bond portfolios do not require a particular disposal of the acquired bonds at some point in time, because they do not have direct effects on the monetary policy implementation. To this end, González-Páramo (2009) proposes two options in this regard: either keeping the portfolios until maturity and letting them gradually shrink over time due to redemptions, or dispose of them in a gradual manner so that no market distortions are created. Another possible option, as mentioned above, is sterilizing the surplus liquidity if there is still any.

Due to time lags in the effects of monetary policy, the timing of any exit strategy implementation is absolutely vital and at the same time very difficult to establish for the reason that the start of any exit intervention will signal a turning point in the monetary policy stance, which undoubtedly would increase yields on long-term bonds via the term structure - the problem in this case could be the premature interest rates rise, which could derail the fragile recovery (Tesfaselassie 2009). All these considerations lead to the question of "when" to implement an exit strategy.

When?

A far more challenging issue than "how" to implement unwinding of monetary easing is when to start doing so. In the context of the current financial and economic crisis it is more

appropriate to consider a state-dependent exit rather than a time-dependent one (e.g., Belke 2009).

Recognizing the right moment for tightening is challenging under normal conditions and even more so when the valuation of risks is surrounded by increased uncertainty which is characteristic of times that require an exit strategy. Besides being technically difficult, identifying the exact moment could be complicated by the "noise" caused by public utterances and pressures aimed at influencing the decision of a central bank (Bini Smaghi 2009e).

However, there is a belief that since the unconventional monetary policies were implemented only after the standard ones reached its bounds, the order of unwinding the accommodative policy should be in the opposite direction. Credit easing came in as a replacement for rate cuts; so undoing the credit easing could be a substitute for raising rates (Baudchon 2009). This sequence is considered the most likely one; however, there is a chance that it will not be followed precisely. Since there is no direct need for low interest rates to be still in place when balance sheets are reduced, and, in the same manner, the balance sheets do not need to be at their pre-crisis levels for the policy makers to raise the rates, there is the possibility of these instruments being used separately. However, using one of them without having coordinated the other would be difficult to rationalize.

To this end, the first step towards monetary tightening is considered simply putting an end to monetary easing (de la Dehesa 2009). The timing of the start of the exit will be discussed later on in this thesis, as it is of a great importance.

The consequences of liquidity withdrawal are generally more difficult to assess than those of an ordinary rise in rates. González-Páramo (2009c) states that the problem with this is that there can be an asymmetric response from the markets – they could tighten to a greater degree than ease, however, it can be solved to a great degree by clear communication. On the other hand, Baudchon (2009) names an advantage of withdrawing liquidity in the fact that it could give the experts enough time to test the robustness of the recovery and its ability to resist a protractive policy.

The next big issue about the exit policy is the proper speed at which it should unfold. Overall, there are four possible strategies:

- gradual tightening, either early or late;
- or aggressive tightening; either early or late.

On the one hand, withdrawing liquidity in the quantities that were pumped earlier into the system, will not go unnoticed and without consequences. Also, taking into consideration the volume of the easing unconventional tools the central banks supplied during the crisis, it will make it very difficult for them to sell the assets without causing a substantial effect on the markets. If this happens too early, the starting recovery could be compromised and the lenders could be left off with significant capital losses.

On the other hand, not withdrawing liquidity on time poses direct risks to price stability in the shorter run and leads to imbalances on the financial markets in the longer run (Belke 2009, Bini Smaghi 2009e). Hence, implementing an exit strategy on time is one of the crucial decisions that will ensure a non-inflationary recovery.

As for the European Central Bank, the liquidity providing operations they used imply an "endogenous" exit strategy: commercial banks will use less credit from the central banks whenever the situation on the financial markets improves. The speed of the reversibility would therefore largely depend on the speed of resurgence of the financial system (Belke 2009). To this extent, a main policy rate that has been too low and for too long can cause problems to the proper performance of the financial markets by reducing the incentives for interbank lending. This, in turn, could distort the important signals coming otherwise from the revival of interbank lending and the associated positive effect on the ECB's balance sheet (González-Páramo 2009b).

Another important factor for the speed of exiting is the maturity of the assets acquired within the enhanced credit support program. Due to the variety in its maturity structure, the liquidation of the program will allow a gradual tightening, which is very beneficial in preserving the economy from abrupt tightening of credit conditions. At the same time, unwinding from the less liquid measures with longer maturities proves more problematic. If market conditions were to improve faster than expected, an increase in the average maturity of the central bank's portfolio would make it more difficult for financial markets to return to normal private sector functioning and would also increase medium-term inflation risks (González-Páramo 2009b). On the other hand, if market conditions do not improve as expected and if there is a possibility of a debt the ECB possesses defaulting, then the central bank risks not only derailing the inflation but also facing significant losses

Due to the main ECB's goal of preserving price stability, it comes to no surprise that the ECB's officials tackle this issue very seriously when deciding on a proper exit strategy and there are grounds to believe that they will keep doing so.

3.2. Coordination between fiscal and monetary policies and its role in an exit strategy

At the onset of the financial crisis of 2007-2009 central banks were not the only authorities to take an active part in crisis mitigation. Governments also stepped in by implementing different types of financial assistance measures, such as: government guarantees for interbank lending, increased coverage of retail deposit insurance, recapitalization of financial institutions and asset relief schemes.

At the end of 2008, the European Commission announced the European Economic Recovery Plan, which was approved in the following month by the European Council, with the aim of driving the European Union's (EU hereinafter) recovery from the crisis. The plan involved a coordinated fiscal stimulus of around €200 billion or 1.5% of GDP, with around €170 billion (1.2% of GDP) at Member State level, as action in their budgets, and around €30 billion (0.3% of GDP) as EU level action within the EU budget and from the European Investment Bank[5]. This fiscal stimulus was meant to induce a major injection of purchasing power into the economy to boost demand and stimulate confidence.

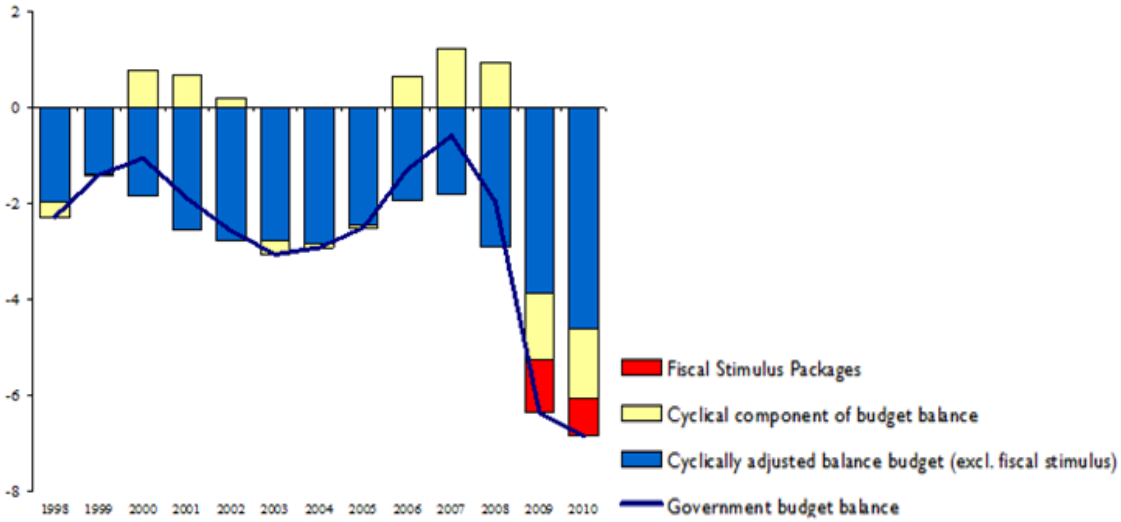
In addition to this plan, in the Eurozone the following measures were also adopted: governments' guarantees for interbank lending (e.g., in October 2008), recapitalization of financial institutions (e.g., the Italian recapitalization scheme at end of 2008 approved by the European Commission), asset relief scheme (e.g., the German asset relief scheme of July 2009). There were even discussions about EU-level coverage of retail deposit insurance, but, due to numerous challenges from the cross-country differences, these discussions did not materialize into anything more. It is important to note that these specific measures had only a limited impact on the fiscal positions, as, for example with government guarantees, which call for payment only when the guarantee is called upon.

The discretionary fiscal policy action in the form of fiscal stimulus packages is certainly a very important part of the fiscal policy response to the crisis. To this point, however, it is important to mention also the automatic fiscal stabilizers, as they represent another source of fiscal expansion.

[5] http://ec.europa.eu/economy_finance/articles/eu_economic_situation/article13502_en.htm, accessed on May 12, 2010

In the European Union the crisis and the following recession has had a huge impact on public finances (see Figure 13). In their "2010 Report on Public Finances"[6] the European Commission report that "as a result of the operation of automatic stabilisers and the discretionary measures taken to support the economy within the framework of the European Economic Recovery Plan, the government deficit has tripled since 2008", moreover they state that the debt ratio will remain increasing, and that it "is the longest lasting legacy of the crisis, that will impact the economy long beyond the current forecast horizon".

FIGURE 13: GOVERNMENT NET LENDING (+)/BORROWING (-) AND COMPONENTS IN THE EURO AREA, % OF GDP



Source: EC Forecast Autumn 2009

As can be seen from Figure the automatic stabilizers (the yellow bars) represent a significant part of the Euro area government budget, which does not come as a surprise if one considers the social systems in the area. But how effective were the automatic stabilizers in acting as fiscal expansion?

The analysis of the effectiveness of the EU tax and transfer systems to act as an automatic stabilizer during the current crisis was done by Dolls et.al. (2009) and they found that

> *automatic stabilizers absorb 38% of a proportional income shock … in the case of an unemployment shock 48% of the shock are absorbed … this cushioning of disposable income leads to a demand stabilization of 23% to 32% in the EU.*

[6] http://europa.eu/rapid/pressReleasesAction.do?reference=IP/10/743&format=HTML&aged=0&language=EN&guiLanguage=en, accessed on May 13th, 2010

Moreover, they compared the performances of automatic stabilizers in the EU to those in the United States and came to the conclusion that the stabilizers in the EU had a larger effect, although this, to a large degree, was due to the different social systems which entail higher stabilizers in Europe. Overall, the performance of the fiscal stabilizers in the Euro area during the crisis was positive and, as expected, provided an automatic support to the economy in addition to the fiscal stimuli provided in many forms by the governments.

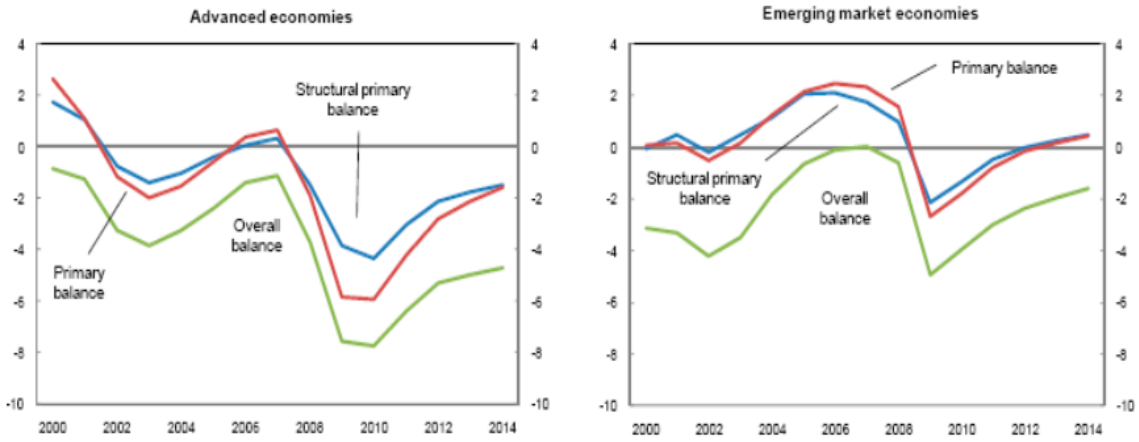
The effect of the fiscal packages on demand, in turn, depends on the credibility of the sustainability of fiscal stimulus, the uncertainty surrounding the economic environment, the intensity and effectiveness of international cooperation, and, last but not least, on the size of fiscal multipliers (Padoan 2009). However, the value of fiscal multipliers is more difficult to assess in times of crisis and, according to Spillimbergo et.al. (2009), there are several reasons for that. First, the prevailing uncertainty about the future has pushed households and firms to engage in a more precautionary behavior, which reduced the marginal propensity to consume and the size of multipliers. Second, the deleveraging increased the proportion of credit constrained consumers and firms, and thus raised the size of multipliers. And lastly, the extremely accommodative monetary policy, which was committed to stay in place for as long as needed, increased considerably the size of fiscal multipliers.

Nonetheless, some studies find that fiscal multipliers during the current crisis have indeed altered, but their results are not as clear as the one suggested by Spillimbergo et.al. More specifically, Blanchard et.al. (2009) find that spending increases, targeted tax cuts and transfers are likely to have the highest multipliers, while general tax cuts or subsidies – lower multipliers. Moreover, Freedman et.al. (2009) find that the size of fiscal multipliers is much larger when there is monetary accommodation. In addition, the IMF (World Economic Outlook 2009) states that the multipliers depend on the debt level, which has significantly increased during the current financial and economic crisis. Overall, however, the literature does not provide a certain conclusion on the size and even on the sign of the multipliers, as there are numerous studies with very different results.

Regardless of the impact it had, the support to the financial system, provided by governments through both conventional and unconventional policies, while justified at the time, needs to be withdrawn at a certain point in time; if nothing else, at least for the reason that it is, by definition, of temporary nature. Among other facts that point to its withdrawal necessity are:

- the largest deterioration of fiscal balances (see Figure 14) since World War II (according to IMF Feb 2010), largely caused by governments' substantial support for aggregate demand, financial and other key sectors;
- expansion of government liabilities;

FIGURE 14: FISCAL IMBALANCES (IN PERCENT OF GDP), ADVANCED AND EMERGING ECONOMIES, 2000-2014

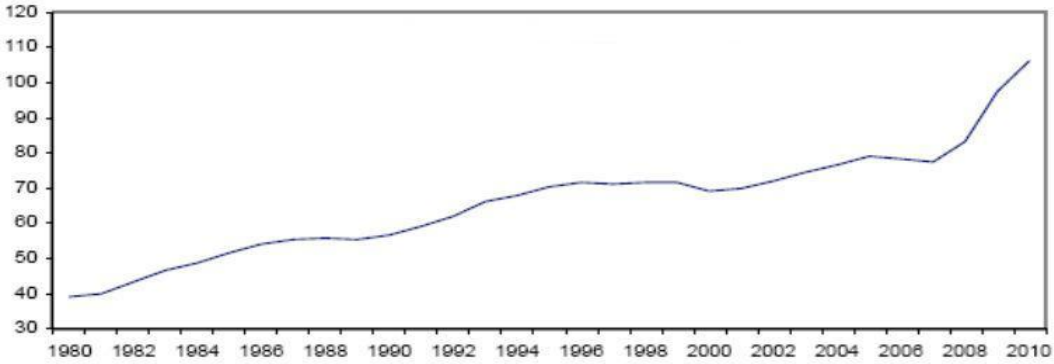


Source: IMF: Exiting from crisis intervention measures - IMF assessment

The deteriorated fiscal balances' situation is more drastic for the advanced economies, where increases in primary balance and government debt far exceed those of the emerging economies. However, the implications from crisis measures are also significant for emerging and low-income countries as it is highly unlikely that they would be protected from loss of confidence in public sector solvency in advanced economies, since confidence crisis easily spill across borders (Horton, Kumar and Mauro, 2009).

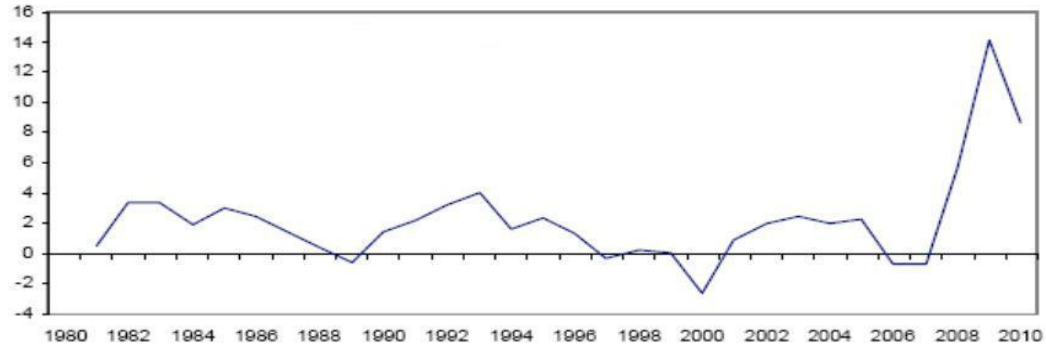
According to IMF projections (Blanchard et.al. 2010), the general government gross debt ratio of advanced economies is expected to rise from 73% at end 2007 to 109% at end-2014 (see Figure 15). More so, the most significant rise in the debt ratio growth occurred at the onset of the current crisis in 2007, when from a declining value the debt ratio of the advanced economies jumped to a striking 14% increase in only two years, being then followed by a lower increase as projected for 2010 (see Figure 16). However, the debt ratio is still far from its pre-crisis level.

FIGURE 15: G-20 ADVANCED ECONOMIES: EVOLUTION OF GOVERNMENT DEBT (IN % OF GDP), AVERAGES BASED ON PPP GDP WEIGHTS



Data Source: IMF, WEO Database April 2010

FIGURE 16: G-20 ADVANCED ECONOMIES: YEAR-ON-YEAR CHANGE IN GOVERNMENT DEBT-TO-GDP RATIO



Source: IMF, World Economic Outlook, April 2010

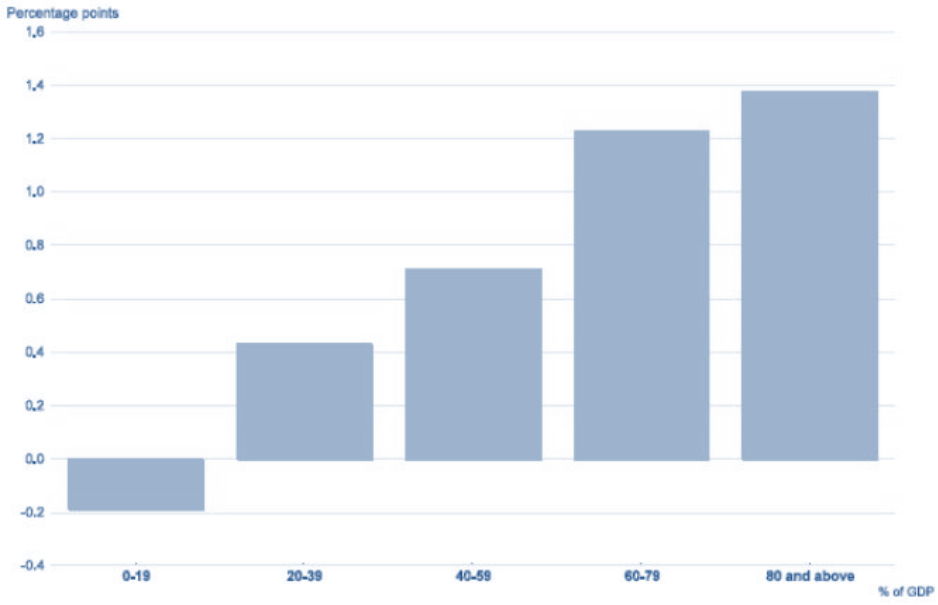
The return to the pre-crisis levels of debt ratio proves not only problematic, but also questionable, as there are arguments that the fiscal policies prior to financial turmoil were unsustainable in the long run and, therefore, should be revised and altered in order to avoid future problems and possibly even government defaults (Afonso et. al. 2010). Returning to pre-crisis debt levels may be attractive for authorities, however it promises to give rise to future challenges (Blanchard et.al. 2010), such as:

- lack of fiscal space for a flexible response in the event of future crises;
- greater vulnerability to crises in all countries were risk of default is somewhat expected;
- simultaneous high indebtedness for many largest economies causing higher international real interest rates, with adverse consequences for private investment and global growth.

Therefore, it is crucial for authorities to ensure fiscal sustainability and to attempt to follow a more ambitious strategy to bring down debt ratios to more prudent levels, especially in the context of increased government debt in many countries.

The foremost motivation of reducing government debt is the cost of the debt and the risk assessment of the country, which tends to increase together with the debt levels (see Figure 17).

FIGURE 17: SPREAD BETWEEN LONG-TERM AND SHORT-TERM INTEREST RATES VS. GROSS GOVERNMENT DEBT IN % OF GDP



Source: OECD Economic Outlook 86 Database

A more prudent fiscal policy will also be beneficial especially due to the demographic problems existent in most of the advanced economies.

Overall, the fiscal imbalances pose three major challenges for central bankers:

- High government indebtedness risks driving inflation expectations up;
- Large fiscal imbalances risk pushing medium and long-term interest rates up, thus causing adverse consequences for private investment and increasing the costs of government debt, which pose a direct threat to future growth;
- Impaired fiscal positions do not leave enough room for manoeuvre if needed, due to the diminished fiscal stabilizers, hence placing a bigger burden on the monetary policy.

Before 2010 there was a belief among economists (e.g., de la Dehesa) that the fiscal exit should be initiated before the monetary one, as the former is the more costly and less nimble

stimulus instrument. The justification was that the more nimble monetary policy can respond more flexibly to changing macroeconomic environment, so that it can be used to attain a needed level of stimulus without having to adjust the fiscal policies and, at the same time, provide a solid shield for undesired increases in inflation. An expansionary fiscal policy enforced over time has a direct impact on the accumulation of debt, whereas an easing monetary policy does not pose any direct immediate threats (considering lack of price pressures in various markets). Moreover, a monetary tightening will have negative effects on the fiscal positions, while a fiscal tightening does not necessarily complicate monetary management (Blanchard et.al. 2010).

The main challenge, thus, would be establishing the appropriate time of fiscal stimulus withdrawal. On the one hand, a premature exit will undermine the fragile recovery, and on the other hand, a delayed withdrawal may distort the market expectations about fiscal sustainability, which would distort private incentives and put upward pressure on interest rates on government paper and thus create a vicious circle, or, as it is often called in the literature, a snowballing effect of debt. Francesco Giavazzi (2010) states that removing monetary accommodation too soon is risky for two reasons: firstly, because, as stated above, it "would raise the chances of a double dip", and secondly, because it "runs the risk of reopening a banking crisis [due to uncertainty whether] the problems in the financial industry have been all solved". Consequently, he suggests that keeping the accommodative monetary policy and not adjusting the fiscal policy will most likely result in the steepening of the yield curve, which will force the government to "either shorten debt maturity, thus raising the roll-over risk, or to incur an increase in interest payments". The author sees the solution in committing to future spending cuts, which, if one takes into account the Ricardian equivalence, might not yield the desired effects.

In this way, among economists prior to 2010, and, more specifically, prior to the Greek debt crisis, there was a belief that the best exit strategy from fiscal and monetary stimuli was characterized by sequential and gradualism with fiscal unwinding commencing first. Nevertheless, in many countries to date, in the full unwinding of the sovereign debt crisis, the fiscal consolidation is enforced by the markets and so the fiscal exit has to come before the monetary exit and even earlier than initially planned. Naturally, countries with weaker fiscal positions are under a higher pressure to start exiting than fiscally sound economies. In the current conditions, thus, starting with the fiscal exit first is a necessity rather than a conviction.

In the Euro area, where the sovereign debt crisis has in fact originated, it was decided by

the ECOFIN to start the fiscal tightening simultaneously in all countries[7], to make the exit more credible for the markets, and, thus, to contain the contagious spillovers that pose a threat to the economic recovery. Moreover, to not undermine the once commenced recovery, monetary authorities have also made it clear that the monetary exit will be more gradual than initially planned.

The arguments presented above support this decision, as it is apparent that a continued fiscal support creates much more problems for the conduct of monetary policy than vice versa. Moreover, a monetary tightening will have negative effects on the fiscal positions, while a fiscal tightening does not necessarily complicate monetary management. The forced fiscal exit, however, does have its negative side, as fiscal consolidation, especially in troubled countries, comes at a high costs of government budget (read spending) reductions, social reforms, reduced investment, which may all significantly impair the recovery and, possibly even, the medium-term economic growth.

[7] http://www.euronews.net/2009/09/02/eu-ministers-discuss-stimuli-and-bonuses/, accessed on April 27th, 2010

3.3. Exit strategy in an international dimension

The coordination between fiscal and monetary policies is not the only relation that needs to be taken into account when considering exit strategies. For an exit to be successful, i.e., to be followed by recovery and a consequent return to normalcy, it has to be coordinated not only between fiscal and monetary policies within a country, but also on an international level, or between countries.

To this matter, by 2010 the global financial world has become so significantly interconnected that the spread of panic on financial market, or, to that matter, the spread of the crisis, within days and even hours has come as no surprise. There is now a general belief that the instant response by the financial authorities – including emergency liquidity provisions, interventions in financial institutions etc. – managed to curtail an epidemic panic (see Chapter II for a more detailed analysis). Cotarelli and Viñals (2010) argue that the coordination of the massive anti-crisis measures was facilitated to a certain degree by the significant synchronicity of the onset of the crisis. However, the recovery is likely to be less synchronized as different countries experience different pace, starting point and sources of recovery. This fact points to the conclusion that future international cooperation will be more challenging and, and thus, will play a vital role on the path to normalcy.

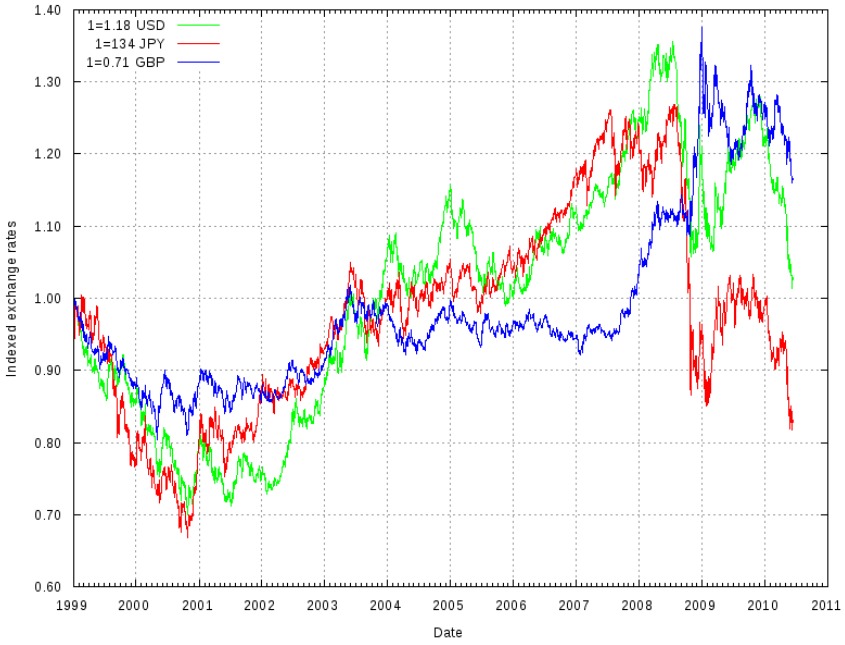
It goes without saying, though, that achieving a successful exit from the crisis implies, first of all, a thorough consideration of country specific conditions. Nevertheless, global or regional economic conditions cannot be ignored, as most of the countries nowadays represent either large or small open economies with deep interconnections between them. The importance of international cooperation was also acknowledged on the level of G20, when during their meetings in St. Andrews in November 2009 the International Monetary Fund (IMF hereinafter) defined the principles for the exit strategies, which, among others, envisaged international policy spillovers and cross-border collaboration:

> *Making exit policies credible and consistent, together with communication and consideration of spillovers, will improve outcomes for all countries. Synchronization of unwinding across countries may be feasible and desirable for a few - but not for all - policies as specific financial and monetary measures have important cross border spillovers and their asynchronous withdrawal could give rise to inconsistencies* (Blanchard et.al. 2010).

Moreover, according to Nanto (2009) the lack of policy coordination could also have adverse effects beyond the countries directly affected by the crisis.

An example of policy spillover is the effect of an earlier or faster pace exit in one country on the exchange rate in another country, which in this case will bring to currency appreciation, and moreover, result in even tighter monetary conditions. Another example of spillovers is the fact that reduction in liquidity supply of major currencies (*e.g,*. The US dollar) may have important implications internationally (Minegishi & Cournède 2010), as was the case in the run-up to the crisis (McGuire *et al*, 2009 via Minegishi & Cournède 2010). To date, there is no reason to believe that the euro area economies face the risk of tighter monetary conditions from the former relation, as, since the beginning of 2009, its exchange rate against the major world currencies was depreciating (see Figure 18). As for the reductions in foreign currency liquidity supply, it is reasonable to say that this problem was, to a large degree, solved by the introduction of the swap lines.

FIGURE 18: EURO EXCHANGE RATE TO USD, JPY AND GBP



Source: ECB Statistical Data Warehouse

The implementation of individual exit strategies, indeed, entails spillover risks and challenges to macroeconomic cooperation. However, the main risk a simultaneous exit poses to the global economy is that of creating a large demand shock and undermining the global recovery. For instance, if the authorities in China, a country that accounts for a considerable part

of the global demand and is one of the major foreign trade partners for many countries, decide to tighten their monetary conditions, this decision will trigger a large demand shock and, thus, have a negative impact on the global recovery. On the other hand, the Asian countries (including China) are the ones most likely to exit first due to their earlier recovery. Hence, to avoid a global demand shock the exiting countries should do so smoothly.

In fact, the impact of a country's fiscal or monetary exits on demand in other countries through the foreign trade is one of the reasons for the common belief that a successful exit and a global recovery can be achieved by coordinating the fiscal and monetary exits on an international level, rather than by simply synchronizing them. However, a complete synchronization of exits between countries does not only pose direct risks to the global recovery (through a shock to the global demand, for instance), but also appears to be almost impossible to implement, if one considers the cross-country differences. Hence, it is safe to say that in the current conditions the best-case scenario for the exit on international level entails coordination *in* moderate asynchronicity rather than coordination *and* synchronicity.

3.4. Exit strategy challenges posed by the intervention measures

The coordination between monetary and fiscal exits within a country and the latter coordination of these exits between countries are, by far, not the only considerations monetary authorities need to take into account when designing an exit strategy. The massive support provided by the central banks during the crisis has exposed them to two major issues. Namely, to the increased balance sheet and to the potential deanchoring of inflation expectations, which poses a direct threat to price stability and, last but not least, to the success of the economic recovery.

Thus, designing a successful exit strategy implies taking into account these two aspects of policy making. However, it is fair to state that for central banks these two aspects are not so much issues as vital considerations, since both of them play significant roles in the success of monetary policy.

3.4.1. The Balance Sheet Aspect

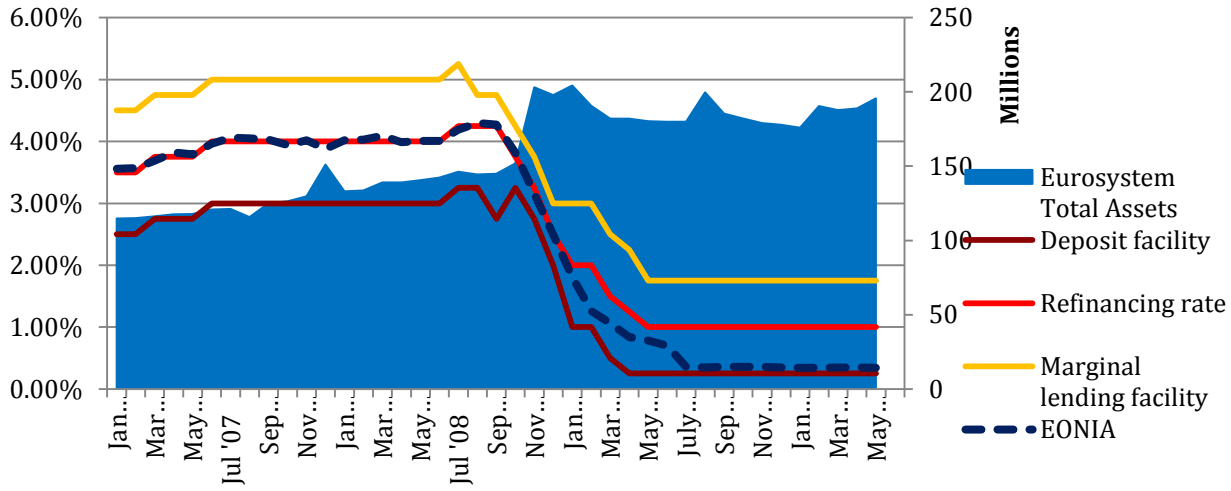
The response of central banks of the major advanced economies to the crisis took place mainly in three areas: cutting the main policy rate, ensuring stability of financial markets, and intervening in the troubled interbank market. The last two interventions involved purchases of financial assets in volumes large enough to have the desired easing effect on the economy. However, monetary easing was not the only effect they had: their use also lead to a considerable expansion of the balance sheets of central banks. Anyhow, the easing was achieved not only by the increased size of balance sheet, but also by the altered composition of the balance sheet, which allowed central banks "to enhance the overall effects of unconventional policy measures, given constraints on policy implementation" (Shiratsuka 2010).

This kind of unconventional policy - using both elements of the balance sheet, size and composition - is typical of many central banks during the current crisis. Theoretically, the use of the first element only and keeping the composition of the balance sheet constant can be implemented by restraining money market operations with standard tools, which classifies as narrowly-defined *quantitative easing*; the second variant involves changing the composition of the balance sheet but keeping its size constant by replacing conventional assets with

unconventional assets, and classifies as narrowly-defined credit easing or *qualitative easing* (Shiratsuka 2010).

Lenza, Pill and Reichlin (2010) state that during the current crisis "both quantitative … and qualitative easing acted mainly through their effects on interest rates and, in particular, on money market spreads, rather than solely through 'quantity effects' in terms of money supply". This conclusion seems to fit the ECB data quite well (see Figure 19).

FIGURE 19: ECB POLICY RATES, EONIA AND ECB BALANCE SHEET SIZE



Data source: ECB Statistical Data Warehouse

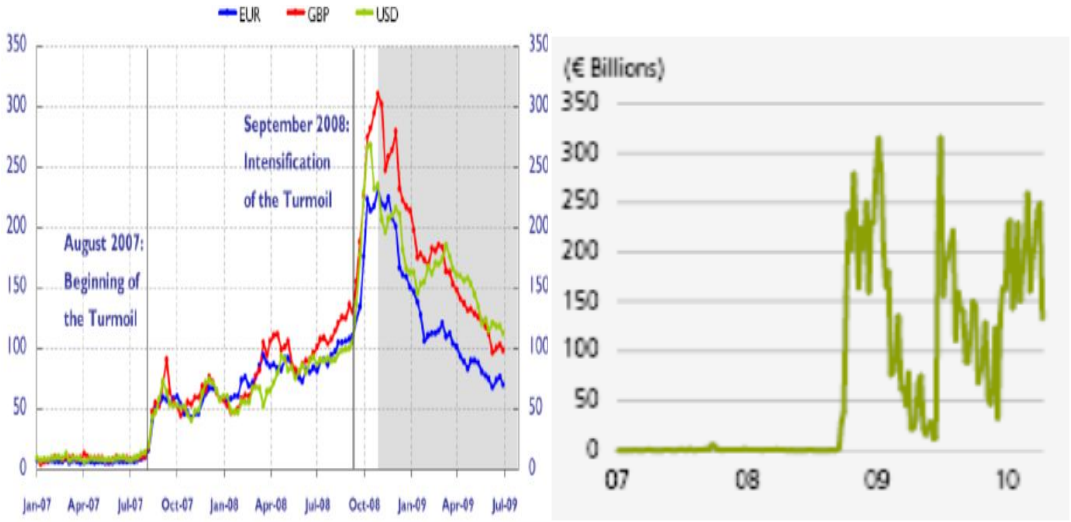
However, the main justification (or, better said, the direct effect) of using both size and composition of central bank's balance sheet is to provide liquidity to the market and thus to help anchor market expectations of the future course of short-term interest rates development. This matter is discussed in detail in the following subchapter.

The expanded balance sheet is an important consideration in designing a successful exit strategy also because the asset and liability sides of central bank's balance sheet have different effects on the financial markets. The asset side, thus, "works as a substitute for private financial intermediation, e.g., through outright purchases of credit products", whereas "the liability side, especially expanded excess reserves, functions as a buffer for liquidity risk in the financial markets" (both Shiratsuka 2010).

To this point, the evolution of excess reserves parked with the ECB (see Figure 20) presents a special interest. The deterioration on the interbank lending market, as represented by the evolution of the interbank market spread, has resulted in increased use of the ECB's deposit

facility. However, the heightened counterparty risk was not the only reason: the interbank rates and the ECB's deposit facility rate were also very close, so it comes as no surprise that commercial banks resorted to this facility to a large degree. In fact, as Curdia and Woodford (2010) state, the changes in the supply of bank reserves were beyond those required to achieve an interest-rate target.

FIGURE 20: INTERBANK MARKET SPREAD AND USE OF ECB'S DEPOSIT FACILITY



Source: Bini Smaghi 2010 & www.alliancebernstein.com

The increased supply of excess reserves, especially in an economy where the central bank normally deals with liquidity shortage, risks causing inflationary pressures unless withdrawn in a timely manner. For the ECB this implies resorting to liquidity sterilizing operations as opposed to their normal liquidity supplying operations, especially as it entered a phase of liquidity surplus in mid-2010. However, the above-mentioned example of surplus-liquidity countries, such as Chile, the Czech Republic and Israel, proves that as long as a central bank has the tools to withdraw the liquidity, the inflation can be controlled. To this matter, the ECB's sterilization tools include fixed-term deposits (used for the first time on June 1st 2010) and term deposits at variable rate tenders. Hence, the ECB has the technical ability to withdraw the liquidity surplus without letting it threaten price stability.

The current financial crisis has impaled not only the balance sheets of central banks but also of many key financial intermediaries. There is a general opinion that their weakened financial positions caused the disruption in the flow of funds between lenders and borrowers, which reflected in sharp rises in various key credit spreads as well as in a significant tightening of lending standards, which at its turn, raised the borrowing costs and accentuated the recession

(e.g., Gertler & Karadi 2009). The contraction of real economy directly influenced the asset values, which reduced throughout.

In their study about portfolio rebalancing effect, stemming from the changes in the composition and size of central bank balance sheet, Bernanke and Reinhart (2004) argued that a central bank may influence term premiums and an overall yield curve by switching to longer maturity government securities in its assets portfolio, if investors treat them as imperfect substitutes. Likewise, if the monetary base is an imperfect substitute for other financial assets, a central bank may also influence prices and yields of non-money assets by increasing the monetary base (Bernanke & Reinhart 2004).

Undoubtedly, the large volumes of liquidity reflected in increased balance sheet size that were supplied to prevent the collapse of money and financial markets, if not sterilized, pose a direct threat to price stability, which is the primary objective of many central banks. An untimely or improper withdrawal could easily spill into increased inflation, creating the risk of a double dip in recession. Moreover, the increases in the ECB's liabilities, as driven by the increased excess reserves, reflecting the high liquidity preferences of the financial intermediaries, which, in turn is caused, to a significant degree, by the heightened counterparty risks, created a situation of liquidity surplus. This situation, however, does not prove very problematic, as the ECB possesses the technical ability to withdraw the surplus by the means of term-deposits, which have already been used.

3.4.2. Inflation expectations anchoring issue

As stated in the previous subchapter, the main justification for (or, better said, the direct effect of) using both size and composition of central bank's balance sheet is to provide liquidity to the market and thus to help anchor market expectations of the future course of short-term interest rates and inflation development. The critical importance of well-anchored inflation expectations is widely recognized. There are several reasons why anchored expectations are of essence.

First, due to the lags associated with the monetary transmission mechanism a monetary policy must be forward-looking. In this respect, central banks that apply forward-looking policy extensively rely on the monitoring of inflation projections and inflation expectations over various horizons, and their performance, thus, directly depends on the quality of inflation projections and on how well the inflation expectations are anchored.

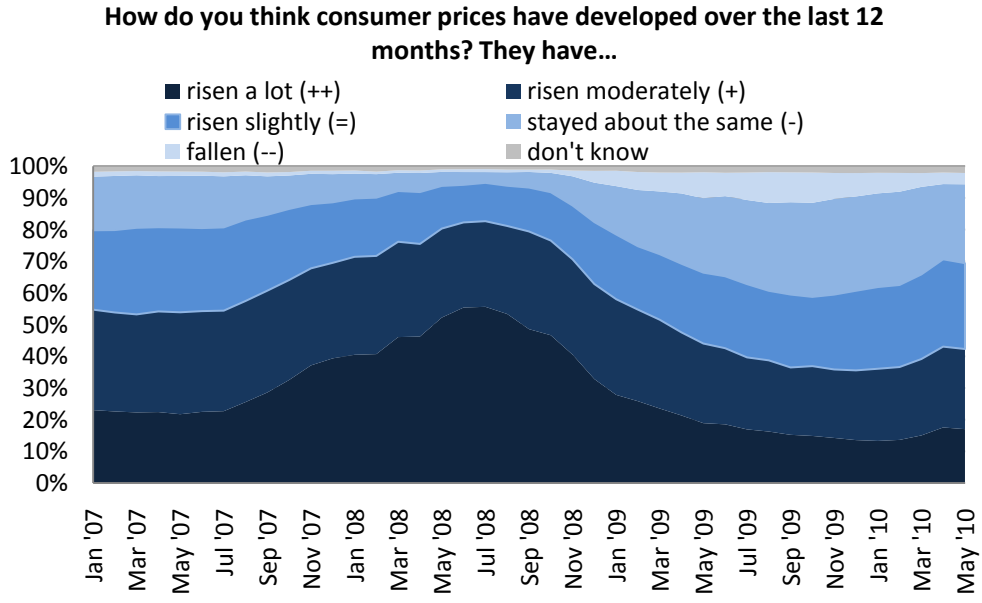
Second, as Bini Smaghi (2009a) states, it is rather difficult for a central bank to increase the inflation expectations in a significant way and, at the same time, avoid an upturn in the nominal long-term interest rate with some time lag. In an economy with developed financial markets it is quite challenging to set the real long-term interest rate as the operational target for monetary policy.

Third, in regards to the current European situation, anchoring inflation expectations is now probably more important than ever, as, whenever there is a negative shift in inflation expectations, the abundant liquidity situation, unless withdrawn properly and on time, will risk creating even higher inflationary pressures. In this context, preserving the well-anchored inflation expectations for the ECB is crucial.

Needless to say, well-anchored inflation expectations greatly facilitate the conduct of monetary policy, be it in normal times or times of crisis. To this point, by mid-2010, regardless of the significant increase in the ECB's balance sheet size, the Euro area inflation expectations remain well anchored.

One measure of inflation expectations is given by survey-based results. One of the most popular consumer surveys in Europe is the European Commission's monthly Household Survey, which, among others, assesses the public's perception of price stability for the past twelve months (see Figure 21) and calculates the expectations for the next twelve months (Figure 22).

FIGURE 21: PAST INFLATION EXPECTATIONS IN THE EURO AREA

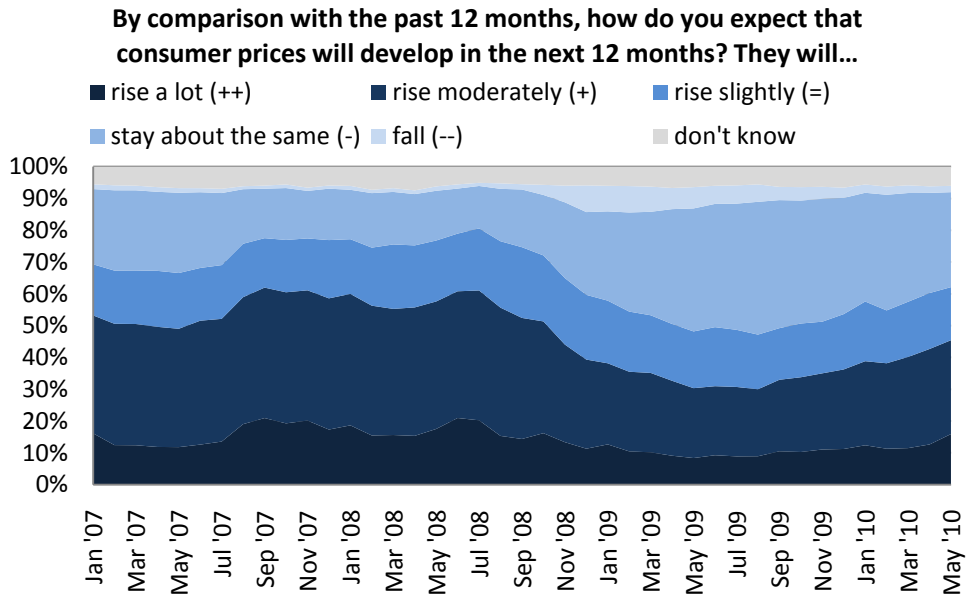


Source: European Commission Household Survey

Based on the results of this survey it is safe to state that the inflation expectations in the Euro area have been, and still are, well-anchored, although, there is now an increasing share of people that believe the inflation to rise moderately as well as to rise considerably, at the expense of the decreasing share of those who believe the inflation to stay about the same.

Moreover, the public perception of the past inflation developments conveys that currently there are higher shares of market participants that believe the inflation to have risen slightly (27%) or moderately (25%) within the past previous twelve months, and 17% of those who believe it has risen significantly, which, compared to the Summer 2008 levels of above 50%, points to a stabilization of the inflation perceptions.

FIGURE 22: PUBLIC'S PERCEPTION OF INFLATION OVER THE LAST TWELVE MONTHS



Source: European Commission Household Survey

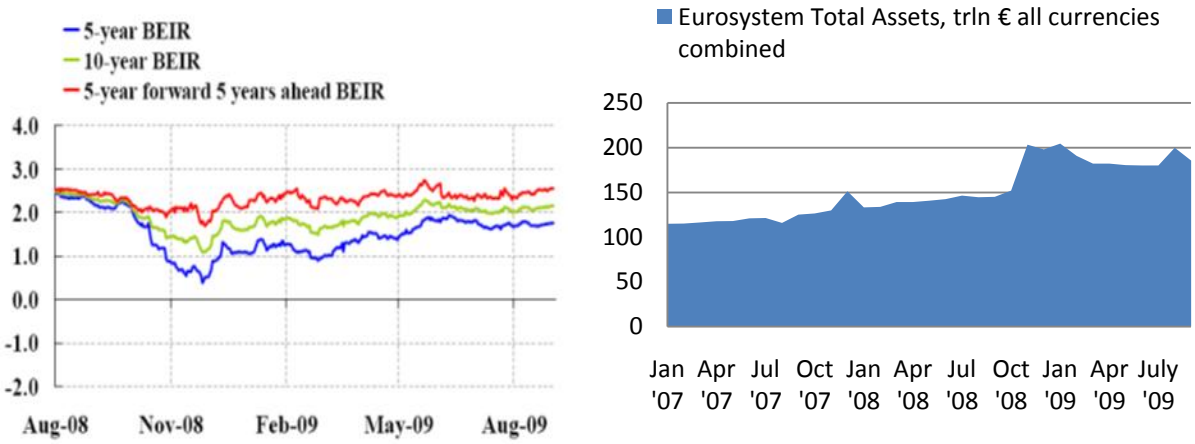
The survey-based results are surely useful for the central banks as they, if properly organized, illustrate the authentic market expectations. However, the anchoring of inflation expectations is a too important benchmark for assessing whether the stance of monetary policy has become too expansionary, to rely on survey-based results only. Moreover, Bini Smaghi (2009e) points that during the pre-crisis period and then during the crisis itself the expectations were not always formed in a rational way, as market participants often form their expectations by observing the actions of the monetary authorities assuming the latter has better and more information. As a result, market expectations tend to be biased and so relying on them may be

very dangerous, as, if the anchoring is not as strong in reality as the policymakers assume it to be, it might shift the whole yield curve upwards and so a decision to increase policy rates may result in a much sharper tightening than expected.

An obvious solution to this problem is to use other measures of inflation expectations. To this point, the break-even inflation rate (BEIR hereinafter) is a measure of inflation expectations commonly used by central banks. The BEIR is the difference between nominal and inflation-linked bond yields, thus reflecting the difference between the nominal interest rates and the rate markets charge for taking on inflation risks.

By mid-2009, regardless of the significant increase in the ECB's balance sheet, which led to a larger risk than would normally be the case due to the presence of riskier assets accepted as collateral, direct interventions in credit markets, etc., the Euro area inflation expectations as measured by the BEIR remained well anchored (see Figure 23).

FIGURE 23: ECB BALANCE SHEET AND INFLATION EXPECTATIONS AS MEASURED BY THE BREAK-EVEN RATES



Sources: Bini Smaghi (2009e) and ECB Statistical Data Warehouse

However, according to Hördahl and Tristani (2007), the BEIR is a noisy measure of inflation expectations as it also contains an inflation risk premium, and possibly differential liquidity premia components. The size of the inflation risk premium depends on the inflation uncertainties, being larger when high uncertainties are present. Christensen, Dion and Reid (2004) state that "inflation uncertainty is positively correlated with the level of inflation expectations… [and]… the BEIR will tend to rise to a higher degree than the increase in inflation expectations".

To date there is little agreement in the theoretical and empirical literature on the sign, size, maturity structure and volatility of inflation risk premia. In a recent study on the inflation risk premia in the Euro area Garcia and Werner (2010) find that the BEIR term structure and the inflation risk premia are predominantly upward sloping but quite flat, from 7 basis points one year ahead to 25 basis points at longer horizons for the inflation risk premia. The authors also conclude that the inflation expectations are fairly stable at around 2% for medium to long horizons.

While the sign, size, maturity structure and volatility of inflation risk premia still differ from research to research, this fact does not diminish the importance of having well-anchored inflation expectations to the central banks. In fact, as also Bini Smaghi (2009e) states, guiding expectations is a key element of an exit strategy, as policymakers need to make sure that the large amount of liquidity provided within the enhanced credit support program does not turn into inflationary pressure. To this end, the monetary authorities should continue closely monitoring the inflation expectations (in all possible measures) and confirm their commitment to low inflation, which in the case of the ECB, has been done numerous times so far.

CHAPTER IV. EXIT STRATEGY AND TIME: HISTORICAL EXPERIENCE AND TIMING RISKS

The present chapter investigates the time aspect of an exit strategy, as contained both in the future risks from an incorrectly conducted exit and in the lessons drawn from the past experiences. With this, the author, using also the findings from the previous chapters, attempts to develop an exit strategy for the present by identifying the set of principles that could govern ECB policymakers on the way from the current crisis towards normalcy.

4.1. Premature vs. delayed exits: two scenarios for an exit strategy

The global financial crisis posed new challenges to economists and policy makers not only in designing a proper response but also in planning an exit strategy that would both unwind this very response and preserve long-term policy objectives.

From summer 2007 and on central banks actively responded to the negative developments on the financial markets by using their main policy rate tools to their limits and to a large degree resorting to unconventional measures. Being of a temporary nature, the unconventional measures will most likely be withdrawn whenever there is reasonable (as deemed by central banks) improvement in the economic outlook and/or in the functioning of financial markets. The many challenges discussed in the previous chapter, such as the balance sheet expansion issue, the anchoring of inflation expectations, the inflation risk premium etc., are certainly to prove important. However, there is a belief among economists that an even bigger challenge is identifying the proper time and pace for reducing and then eliminating the stimulus, or, shortly, for the exit (e.g., Cotarelli and Viñals 2009, Minegishi and Cournède 2010, Bini Smaghi 2009a).

Establishing the correct timing for the exit proves complicated for several reasons. Athanasios Orphanides (2009) points out that

> *increased uncertainty about the multipliers and transmission lags of [monetary] policy measures … pose significant … risks that one may misjudge the appropriate timing and force of policy action … [in an environment where central bankers'] … experience with very low policy rates and unconventional policies is rather limited, and for some policies non-existent.*

Besides increased uncertainty, identifying the correct moment of exit, according to González-Páramo (2009b), can also be complicated by technical difficulty and by "the "noise" introduced by public utterances and pressures aimed at influencing the decision of the central bank". Facing these challenges, policy makers will have to consider carefully all the pros and cons of both premature and delayed exits, as both pose significant risks and counter-effects.

The risks of premature and delayed exits have been widely discussed over the last two years. Below are some of the opinions.

With a premature exit, Bini Smaghi (2010) notes that:

> *the economic recovery may be put at risk, as higher interest rates will produce a tightening effect on consumption and investment decisions at the very time when the pick-up in the economy is still fragile. Furthermore, it might further restrict credit conditions while the banking system is still restructuring its balance sheet.*

In addition, the early exit may be extremely costly especially when inflation is below a central bank's definition of price stability (Orphanides 2009).

Belke (2009) notes that "if a central bank starts exiting prematurely, it will be hard for it to reverse its course, should a deterioration in economic conditions materialize again", explaining the effect of irreversibility of the withdrawal of unconventional measures by the dependence of non-standard measures effectiveness on policy duration expectations. For example, banks will not be motivated enough to supply credit to the private sector if they expect the easing liquidity providing policy to be short-lived (González-Páramo 2009b). To this point Belke (2009) also adds that "more generally, even the appearance of a lack of commitment to its non-conventional measures (or simply of being uncomfortable with them) can prove self-defeating", supporting his words with the example of Japan tightening its policy by raising the interest rates by 25 basis points despite the announcement to maintain its zero interest rate policy until deflation was over, which prolonged the Japanese deflation unnecessarily (Eggertsson and Woodford 2003).

Furthermore, in the discussions on this topic there is a view that the central bank's commitment has to be not only credible, but also realistic, because

> *the public may not believe that public authorities are seriously committed to pursuing non-conventional measures when these measures are of such a large magnitude as to appear untenable for the balance sheet of the central bank or for the sustainability of public finances* (González-Páramo 2009b).

On the other hand, with a delayed exit

> *monetary conditions will remain too lax for too long, sowing the seeds of the next crisis. In addition, the later the tightening, the sharper it needs to be, thus producing valuation changes that may reduce banks' profitability and undermine their ability to support the economic recovery* (Bini Smaghi 2010).

Cotarelli and Viñals (2009) note that a delayed exit "would distort private incentives and create risks to price, financial, and fiscal stability". According to Orphanides (2009), inflation in this case is likely to rise above the price stability objective, especially "when the money multiplier rises from a historical low and thus excess liquidity starts being converted into credit". However, as, Paul Mortimer-Lee notes "the real danger is not inflation, but inflation expectations"[8]. This matter has been discussed in the previous chapter.

Consequently, Belke (2009) states that the loss of faith in the central bank's commitment to low inflation by the public poses another great danger, because, once missing, it is extremely difficult and costly (in terms of output and job losses) to restore it, while a successful inflation expectation anchoring contributes in itself to delivering price stability. Hence, as long as they remain well anchored at the desired level, expectations can greatly facilitate the task of a central banker (González-Páramo 2009b).

Both cases of premature and tardy exits have occurred throughout the last century and their examination proves very useful in properly understanding the risks in the current economic environment.

Generally, policy authorities were more often inclined towards exiting too late rather than exiting too early. Bini Smaghi (2010) states that the quite numerous delayed exits that had happened in history were "either the result of deliberate policy decisions to boost the economy", like cases in the 1970s and early 1980s in Europe, or "forecast errors made in over-estimating deflationary risks and under-predicting the subsequent recovery" that happened in the 2000s[9]. A study by Bordo and Landon-Lane (2010) based on historical narratives, descriptive evidence and econometric analysis finds that in the 1920s and the 1950s the Fed would generally tighten too early, whereas, since 1960s the Fed has generally tightened when unemployment peaked and this tightening often occurred after inflation began to rise, i.e., too late to prevent inflation.

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[8] http://www.risk.net/risk-magazine/advertisement/1565726/centralbanking-com-panel-it-s-soon-exit, accessed on March 2nd, 2010

[9] http://www.federalreserve.gov/newsevents/speech/bernanke20100103a.htm, accessed on February 12, 2010

A popular example of a delayed exit is the case of the "Great Inflation" of the 1970s, when, as Stark (2009) states, after the recessions following the first oil price shock, the potential output levels were assessed too positively and thus forced countries to maintain expansionary monetary policy stances for too long. Needless to say, this resulted in massive acceleration of inflation, hence the naming. Another example of Fed's too-late exit is also the delayed exit from the crisis caused by the dot-com bubble in late 1990s. The post-bubble excessively accommodating monetary conditions were further amplified by the Fed's monetary easing that followed the events of September 11th, 2001. To date, there is a common assumption that the monetary easing during this period aggravated the imbalances in the housing and credit markets, which later on resulted in the eruption of the current crisis.

A textbook example of a premature exit is the case of the United States in 1936, which led to the 1937-38 recession (Bini Smaghi 2010), although some economists oppose the view that the premature fiscal exit was the sole reason of the recession (van den Noord 2010). According to Romer (2009), during the Great Depression fiscal and monetary stimuli were cut back too soon and thus caused a major setback. For inflation considerations, the Fed significantly raised its reserve requirements in three steps in 1936 and 1937. There was also some considerable fiscal tightening, such as the introduction of social security taxes and the unwinding of the pay-out of one-off "bonuses" to World War One veterans by the Roosevelt Administration (van den Noord 2010). According to Romer (2009), the results of the untimely fiscal and monetary exits were "disastrous … and they effectively added two years to the Depression".

Moreover, Bini Smaghi (2010) suggests that the 1936 episode in the U.S. could be considered more of a "brutal" exit rather than an early one, "the effects of which could in fact have occurred at any time, exit or no exit". Rather than calling it a wrongly timed exit, he classifies it as "an example of a badly calibrated and badly communicated exit" (Bini Smaghi 2010).

Some economists name the episode of the slight increase in interest rates by the Bank of Japan in 2000 as another example of a too early exit (Bini Smaghi 2009b). However, recent research suggests that this approach is slightly incorrect (Leigh 2009). For a thorough analysis of this relatively recent and useful for policy makers experience see the next section of this thesis.

Undoubtedly, the decision about the timing of the exit is a very difficult one for policy makers. Thus, it is not surprising that economists and authorities now turn to discussing the

"second-best option" (Bini Smaghi 2010) or, namely, which of the two risks – of premature and delayed exits – would cause the biggest problems for the economy.

As Bini Smaghi (2010) states,

> *several authors, including international organizations, have suggested that the policy authorities should err on the side of being late. They argue that an early tightening is difficult to reverse and tends to hit the economy early in its recovery, and may give rise to a double-dip recession. On the other hand, a late tightening allows more time to bring things back to normal. In addition, the stronger the economy is likely to be, the more resistant it will be to the shock produced by the tightening of monetary conditions.*

Other economists (Strauss-Kahn) seem to have a more specific guideline:

> *The best indicator (for the exit timing) is private demand and employment ... In most countries, growth is still supported by government policies. For as long as you do not have private demand strong enough to offset the need of public policy, you shouldn't exit*[10].

While agreeing with the above expressed opinions, the present author believes that in the current situation in the second-best option discussion a premature exit is somewhat more preferable than a tardy one, as the latter, although clearly having its advantages, inadvertently leads to the build-up of new financial imbalances, to inflationary pressures and to a heightened moral hazard issue. In a not-so-distant time these imbalances could trigger a second, much like the current one, crisis, only then it risks having bigger consequences on the freshly recovered and still somewhat fragile economies. A premature exit, to this point, does not represent the optimal solution, as it, indeed, among others, entails risks of double-dip recession. However, to the author's opinion, an early exit is much like stepping one step-back on the way to recovery, whereas a delayed exit seems more of a return to the initial (pre-crisis) positions. Hence, in the long-term perspectives, a premature exit may be more attractive than a delayed one.

[10] http://www.reuters.com/article/idUSTRE60H18E20100118, accessed on June 8th, 2010

4.2. Japan's experience from 2000's: facts and lessons to learn

Two decades ago, a major advanced economy, Japan, went through a crisis that bears a close resemblance to the current Great Recession (Syed, Kang & Tokuoka 2009).

At the beginning of the 1990s, there was an abundance of liquidity in the Japanese economy caused by easy monetary policies and financial deregulation (Kang and Syed 2009), which contributed to the build-up of unparalleled bubbles in the country's real estate and stock markets (see Figure 24).

Economic historians usually date the beginning of the bubble economy in September 1985, when Japan and five other nations signed the Plaza Accord in New York[11]. This agreement called for the depreciation of the dollar against the yen, thus increasing the U.S. exports by making them cheaper, but it also made it cheaper for Japanese companies to purchase foreign assets, thus, among others, causing an increased investment in U.S. real estate properties.

FIGURE 24: REAL ESTATE AND STOCK MARKET BUBBLES IN JAPAN

Source: Kang & Syed (2010)

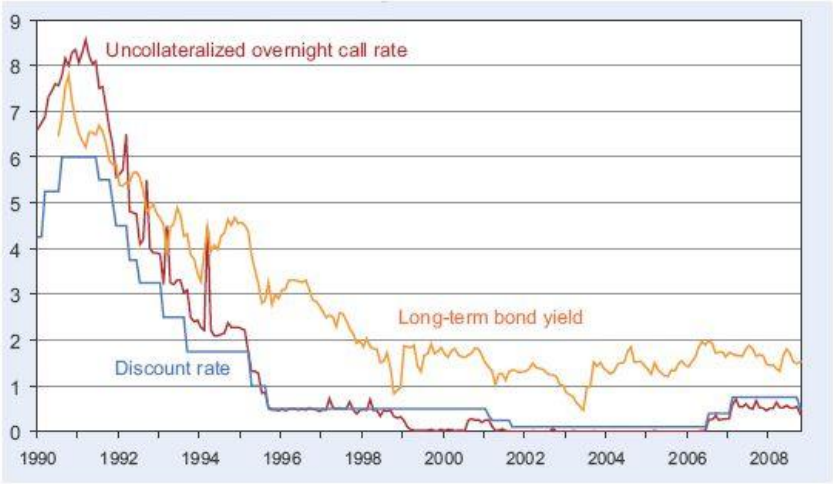
Dixon (1999) argues that the bubble (as he refers to both the real estate and stock market bubbles) was based on the practice of using the rising value of property as collateral for speculative borrowing; since most of this speculation was directed towards equity and property markets, the process of borrowing and speculation intensified and the valuation in these markets got to shocking levels. He supports his opinion by the facts that: at the height of the bubble, Japanese real estate market comprised 42% of world stock market value; at the end of the bubble period in June 1991 the stock market and land markets had declined by about 60% of their peaks;

[11] http://search.japantimes.co.jp/cgi-bin/nn20090106i1.html, accessed on June 1, 2010

the value of loans collateralized by land represented an astonishing 50% of GNP; and property has been estimated as supporting as much as 80% of banks total loan exposure (same citation applies).

In 1991, the Bank of Japan, out of concerns about the rising asset prices, implemented a series of interest rate increases, which brought the rate from 2.5% to over 6% by the end of same year (see Figure 25). Dixon (1999) states that these significant hikes were the primary reason for the bubble burst (as another possible trigger he mentions the Gulf War).

FIGURE 25: JAPAN'S INTEREST RATES



Source: Kang & Syed (2010)

Either way, since banks and businesses had much of their assets in either land or cross-shareholdings with companies to which they allied, the shock sent to these assets and debts on which they were secured, transformed a significant amount of banks' debt into non-performing debt, causing a deterioration in commercial banks' balance sheets and contraction in lending to companies (Yamaoka & Syed 2010).

Kang and Syed (2009) state that despite the weakened growth there were even some signs of recovery in the middle of the decade. However, later on the recovery was crushed by the apparent post-bubble recession (which Kang and Syed (2009) compare to the post-Lehman's panic in 2008) and by the outburst of the Asian financial crisis in 1997 (Syed, Kang & Tokuoka 2009).

In the year following the Asian crisis, the Japanese real economy was hit especially severely by the breakdown in the interbank market and a number of high-profile failures in the financial sector, which, according to Kang & Syed (2009), were caused by a renewed stock

market crash and mounting losses on real estate loans. These events resulted in negative inflation, which, despite significant policy efforts, led to a sharp rise in public debt and a "lost decade" of economic stagnation (Syed, Kang & Tokuoka 2009). For illustration purposes the authors point out that in 2002 unemployment had risen to a post-war high of 5,5%, non-performing loan ratio peaked at almost 9%, while gross public debt more than doubled to over 160% of GDP, by far the highest among advanced economies (same citation applies).

Kang and Syed (2009) add that the combination of slow growth in the preceding decade in comparison to the one before, and the decline of the aggregate price level considerably contributed to the worsening of the crisis. In contrast, Baba (2004) shows that the deflation of general prices acted rather as a manifestation of more fundamental problems than a root cause of the stagnation of the economy. He identifies the basic driving force of the stagnation as "the need to work off the excesses in capital, labor and debt built up in the late 1980s and early 1990s".

Over the 1990s, the Bank of Japan loosened its monetary policy by, as mentioned above, cutting its main policy rate (see Figure 25) and by expanding its conventional open-market operations by extending:

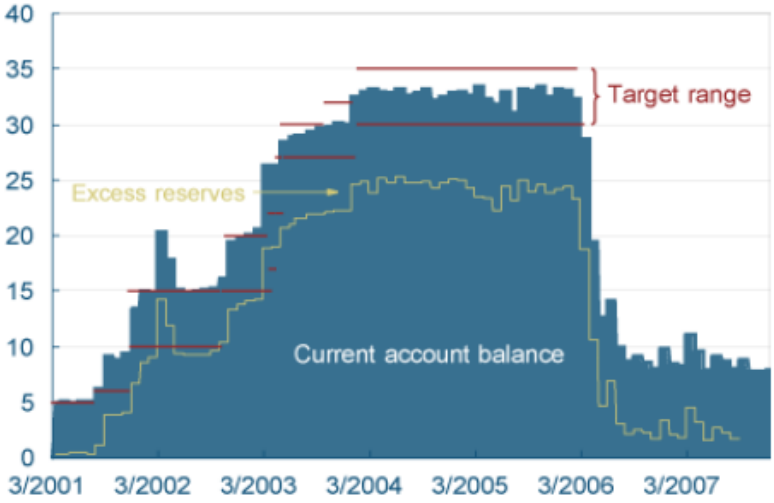
- the range of market participants;
- the range of acceptable collateral;
- the maturity of the operations[12].

Yet, regardless of the significant effort by the central bank, the impact is generally characterized as limited due to deteriorated banks' and debtors' balance sheets (e.g., Yamaoka and Syed 2010). The situation at the time was also aggravated by an economic downturn triggered by the burst of the global IT bubble (Blinder 2010). Already having their policy rates reached the zero lower bound and thus facing a "liquidity trap" (Krugman 1998), the BoJ had no other choice but to adopt unconventional measures.

From February 1999 to August 2000 the BoJ, under its "zero interest rate policy" (Sugo and Teranishi 2008), maintained overnight interest rates at virtually zero. After a quick episode of positive policy rates, in March 2001 the BoJ introduced, for the first time in an advanced economy in the post-war world, the regime of Quantitative Easing (see Figure 26).

[12] http://www.boj.or.jp/en/type/release/zuiji/kako01/k981113a.htm, accessed on April 7, 2010

FIGURE 26: QUANTITATIVE EASING IN JAPAN



Source: Sugo & Teranishi (2008)

For this, the BoJ:

- changed *its operating target to the outstanding balance of banks' current accounts* at the central bank, while the reserves were still kept at levels far above required. At its peak, the BoJ's balance sheet exceeded ¥150 trillion, or around 30 percent of GDP (Yamaoka and Syed 2010);
- increased its *outright purchases of long-term Japanese government bonds* (hereinafter JGBs) from ¥400 billion to ¥1.2 trillion per month to facilitate liquidity provision and instituted a "banknote rule"[13] – a QE discipline measure to keep outstanding long-term government holdings below the amount of banknotes in circulation (Yamaoka and Syed 2010);
- started a program of *outright purchases of assets with credit risks* in November 2002 by purchasing the stockholdings of the banks experiencing capital shortage. In July 2003, this program was extended by an ¥1 trillion scheme for outright purchases of asset-backed securities (ABS) and asset-backed commercial paper (ABCP) (Yamaoka and Syed 2010);
- announced a *policy duration commitment*, pledging to keep the overnight interest rate at zero until deflation ended (Blinder 2010).

[13] http://www.foxbusiness.com/story/markets/boj-yamaguchi-bank-note-rule-jgb-buys-aimed-market-trust/, accessed on April 8, 2010

Targeting the *outstanding balance of banks' current accounts* is considered the primary policy innovation of Japan's QE. The increases in current account balances were achieved primarily by monthly purchases or sales of the JGBs in open market operations.

The impact of current account balances on real activity in an environment of zero interest rates is not a straightforward one; in fact, most economic models fail to predict it. In an empirical research, set to shed light on this issue, Oda and Ueda (2005) find a small but statistically significant impact of increases in the current account on medium- to long-term JGB yields. However, they interpret these changes as prolonging the market's perception of the duration of the QE, that is, the central bank's policy duration commitment. In addition, Blinder (2010) points out a perception that abruptly decreasing the current account balances of commercial banks may have adverse consequences for the financial system, as the buildup of stock reserves alone could push markets' expectations of future interest rates downwards.

The main justification for *outright purchases of long-term government bonds* was to reduce long-term JGB yields and thus reduce long-term interest rates and stimulate long-term investment in light of the perception that long- and short-term JGBs were imperfect substitutes. More so, Auerbach and Obstfeld (2005) via Spiegel (2006) argue that, if increased JGB purchases flatten the yield curve, such purchases could have expansionary effects by reducing the deficit financing costs of the Japanese government. Empirical researches on real effect of long-term JGBs purchases yield mixed results: Oda and Ueda (2005) do not find any significant effects on medium- and long-term bond yields, while Kobayashi et al. (2006) find that commercial banks experienced positive excess returns when increases in the BoJ current account balance target were accompanied by raising the ceiling on BOJ purchases of long-term Japanese government bonds, as opposed to not finding any excess returns in all other days. Nevertheless, as Spiegel (2006) wisely notes, it is important, when considering the empirical evidence, to take into account the fact that the effects of government bond purchases on long-term interest rates were associated with both changes in agents' expectations of future interest rates and with the government bond purchases, thus making it difficult to differentiate between the two, especially since these policies often occurred simultaneously.

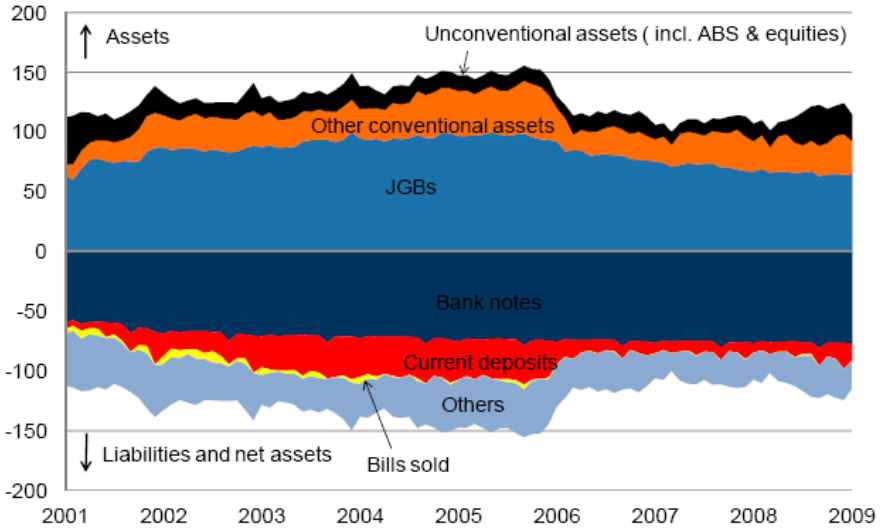
The main driver behind *policy duration commitment* is a central bank's credibility: the stronger the credibility of the central bank, the more market participants are willing to believe its commitment, hence the better anchored are the market expectations of the future interest rates and the easier it is to conduct monetary policy. During the QE policy implementation the BoJ

practiced an extensive communication approach, which rendered quite useful in maintaining the bank's credibility (e.g., Yamaoka and Syed 2010). Baba et al. (2005) use a macroeconomic model to estimate the impact of the policy commitment on the "yield curve" and find an impact of the policy commitment of about 5 basis points on five-year JGB yields and about 2 basis points on ten-year JGBs beginning in 2003. Okina and Shiratsuka (2004) show that expectations of the duration of zero rates lengthened from six months during the zero-interest-rates period to more than one year over the course of the quantitative easing programme.

According to Blinder (2010) "the central idea behind QE in Japan was to stimulate the economy by proliferating reserves and flattening the (risk-free) yield curve, not by decreasing risk spreads". In the same paper he notes that, while it is quite clear that the long-term bond rates had fallen, it is difficult to know how much precisely of the decline was due to the BoJ's purchases and how much was due to its pledge to keep short rates near zero for a long while. A survey of empirical research on the effects of Japan's QE programs by Ugai (2006) concluded that the evidence "confirms a clear effect" of the commitment policy on short and medium-term interest rates but offers only "mixed" evidence that the expansion of monetary base and the modified composition of the central bank's balance sheet had much effect.

As a result of the quantitative easing programme, the BoJ's assets significantly increased: from ¥91 trillion in 1998 to a peak of about ¥155 trillion in 2006, or from 18 to more than 30 percent of GDP (Syed, Kang & Tokuoka 2009) (see Figure 27).

FIGURE 27: BOJ'S BALANCE SHEET, TRILL. JP ¥



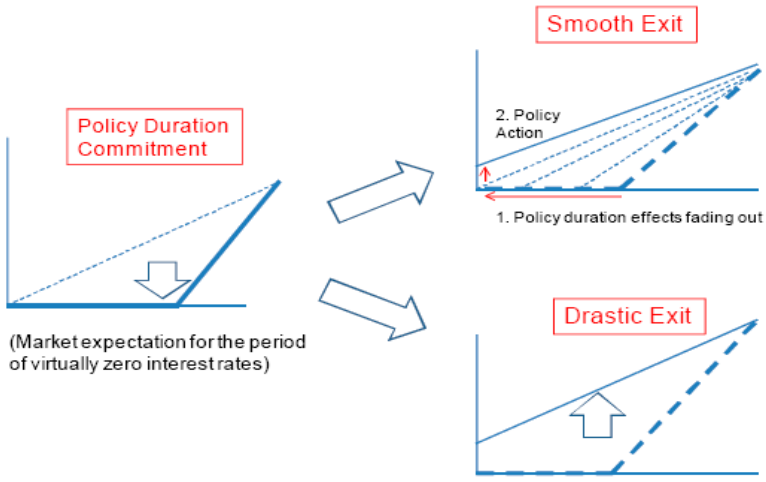
Source: Yamaoka & Syed 2009

Yamaoka and Syed (2010) state that of this increase "about three-fifths came from enhanced liquidity supplying operations, and the rest mainly from long-term JGB purchases, with only a negligible fraction from nonconventional asset purchases", while "on the liabilities side, this was matched almost entirely by a buildup in bank reserves". The first contractions of the BoJ's balance sheet were recorded in 2006 - it is that time (March 2006 to be more precise) that the central bank ended the quantitative easing. They first announced that they would gradually withdraw liquidity while keeping the overnight rate at zero level, and then downsized its balance sheet before raising the policy rate.

The *exit from the policy duration commitment* is often described in the literature as one of the most difficult aspects of BoJ's exit strategy, because, in order to avoid any drastic shifts in the yield curve that could have jeopardized the recovery, the central bank needed to smoothly "shorten" the market's expectations about this duration (Yamaoka and Syed 2010). The authors explain this phenomenon through a graph illustrated bellow (see Figure 28).

According to this graph, the policy duration commitment is reflected in the kink of the yield curve, as the markets anticipate zero interest rates to be in place for an extended period of time. In case of a smooth exit, the central bank preliminarily announces its plans and, in this way, contributes to a gradual shortening of market's expectations of this duration, i.e., shifting the kink closer to origin, before the actual interest rate raise shifts the yield curve upward. A drastic exit, on the other hand, does not leave any chance for the market to smoothly adjust its duration expectations, and so, the yield curve moves upward abruptly, with potentially disruptive effects on activity (Yamaoka and Syed 2010).

FIGURE 28: EXIT/YIELD CURVE: EFFECTS OF POLICY DURATION COMMITMENT



Source: Yamaoka and Syed (2010)

The BoJ made a commitment to maintain an accommodative stance conditional on an easily observable and verifiable statistic: actual consumer price index (CPI hereinafter) inflation, hence, improvements in the inflation outlook were expected to contribute to a gradual reduction in the policy duration effect. Moreover, to make the exit strategy as transparent and clear to the public as possible, on October 10, 2003, the BoJ announced a "More Detailed Description of the Commitment to Maintaining the Quantitative Easing Policy"[14], which further clarified its policy reaction function and provided a clearer guideline for the timing of exit, by announcing two "necessary conditions":

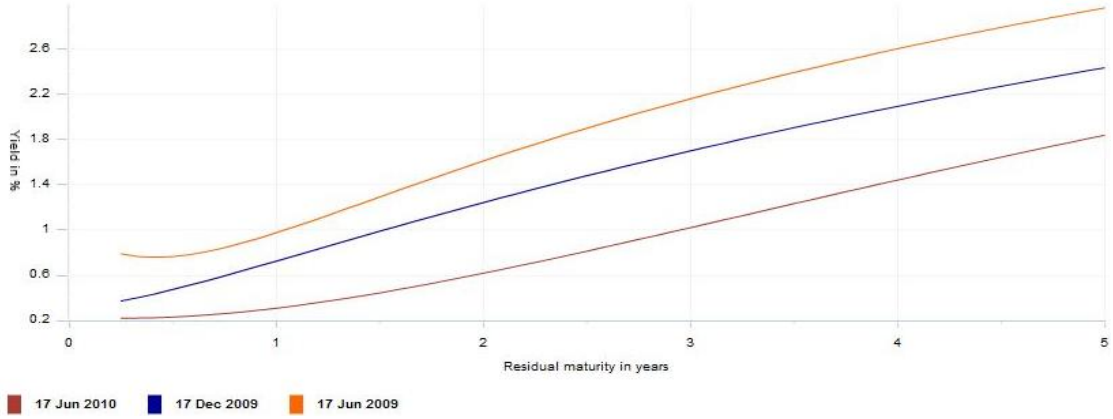
(1) "it required not only that the most recently published core CPI should register a zero percent or above, but also that such tendency be confirmed over a few months", and that

(2) "many Policy Board members need to make the forecasts that the core CPI will register above zero percent during the forecasting period."

To facilitate communication with market participants, the BoJ also started to publish an "Interim Assessment" of economic developments in January and July, in addition to its regular *Outlook Reports* in April and October. Furthermore, through speeches and press conferences, BoJ officials regularly expressed their views on near-term prospects for short-term interest rates, further facilitating an orderly change in market expectations.

To this point, it is interesting to look at the developments in the Euro area yield curve throughout the last year (see Figure 29), especially since there was an attempt by the ECB to start exiting, which, later on, was reversed due to the renewed tensions on the financial markets spurred by the sovereign debt tensions.

FIGURE 29: EURO AREA YIELD CURVE, AAA-RATED EURO AREA CENTRAL GOVERNMENT BONDS. 0 TO 5 Y



Source: ECB Statistical Data Warehouse

[14] www.boj.or.jp/en/type/release/zuiji/kako03/k031010b.htm, accessed on May 3, 2010

The rather smooth short-term yield curve from December 2009 suggests that at the time of the first exit attempt, the expectations entailed that the exit would be fast and smooth. However, six months and a sovereign debt crisis eruption later, the short-term yield curve exhibits a light kink, as compared to the December yield curve, which communicates that the Euro area expectations shifted towards a more delayed exit.

The exit from unconventional asset purchases was facilitated by the "sunset clauses" and by the relatively short maturities of the purchased assets and financial restructuring. The "sunset clauses" was the commitment to terminate the asset purchases in March 2006[15] made by the BoJ at the introduction of QE, and supported by the stabilization of markets from 2002 onwards (Yamaoka and Syed 2010). According to the same authors, the second factor, the relatively short maturities, never really posed any problem to exit, especially since the bidding for ABS was negligible once the economy started to recover, and since the total amount purchased remained substantially below the ¥1 trillion cap on the program, which allowed for a smooth decline of the amounts outstanding at the BoJ as the purchased ABCP matured.

In contrast to debt assets, stocks have no maturity, which makes the exit more difficult (the total amount available for stock purchases by the BoJ was set at ¥3 trillion). In July 2007, at the exit stage, the BoJ announced explicit "selling guidelines", under which it delegated the task to trustees (trust banks), with due attention to diversifying the timing of sales to minimize the stock market impact; the trustees were also allowed to temporarily postpone sales in the event of a substantial decline in stock prices (Yamaoka and Syed 2010). The success or failure of this operation is difficult to assess because it was halted in October 2008, when, at the onset of the current financial turmoil, the global stock markets collapsed.

In an extensive research on the lessons from the Japanese experience, Yamaoka and Syed (2010) conclude that, overall, a smooth exit from quantitative easing, without overshooting of inflation, undermining economic recovery, or disrupting financial markets, is possible. The authors support their conclusion by the facts that:

- the BoJ reduced its balance sheet and excess reserves within a few months, although not to their late-1990 levels;
- there was no obvious disruption to financial markets, as there was no evidence of abrupt portfolio shifts or heightened volatility in safe and risky assets;

[15] www.boj.or.jp/en/type/release/zuiji/kako03/k030611b.htm, accessed on May 3,2010

- the government bonds unwinding lead to only about 35 basis points rise in the yields, which was well within normal market fluctuations

and, thus, the BoJ succeeded in containing any inflationary pressures.

On the other hand, the authors determine that there were two less successful elements of BoJ's exit, and namely, the persistently weak price environment that continued even after the exit, and the incomplete state of the exit, as the central bank still holds stocks and JGBs (Yamaoka and Syed 2010). The authors also state that holding the government bonds and the commercial paper to maturity, in turn, allowed the BoJ to avoid losses, market disruptions and yield spikes in an environment of impaired recovery and subdued inflationary pressures stemming from the sizeable output gap.

To sum up, there are several lessons to be drawn from to Japanese experience, and namely:

- An increase in monetary base does not necessarily mean easier monetary conditions;
- The banking system is crucial for the success of a quantitative policy;
- Quantitative easing will only affect expected inflation if the increase in the size of the central bank's balance sheet is not only sizeable but also perceived as being permanent (Bini Smaghi 2009a);
- Unwinding central banks' purchases of assets with longer maturities or shallower markets will be more challenging, not only in terms of potential market impact but also central bank losses;
- Central bank communication policies will be crucial;
- Some challenges could extend beyond the exit (Yamaoka & Syed 2010).

In particular, the additional risks from financial markets and asset prices might be included into central bank's assessment of monetary conditions.

Generally, the Japanese experience implies that an orderly exit is possible. Also, the inflationary pressures do not pose a significant problem if a central bank has the necessary tools to exit and constantly communicates its intentions to the public. Moreover, liquidity providing operations are rather easy to unwind, whereas private and public-assets may be kept on the central bank's balance sheet for a quite prolonged time, and pose significant challenges in terms of unwinding.

4.3. Exit Strategy for the ECB

In fighting the crisis, central banks have implemented different set of tools, depending on operational settings and market conditions specific to their country. Hence, each central bank faces different challenges and possesses different exit tools specific to its framework.

There is a belief that the exit process is likely to be less complicated for the European Central Bank as opposed to other central banks, e.g., the Fed or BOE, because of their overwhelming reliance on bank-based liquidity measures and small amount of long-term assets purchased within their enhanced credit support (e.g., Minegishi and Cournède 2010). Although, the recent ECB's engagement in purchasing government bonds complicates the exit to a significant degree and wipes away the differences in exit difficulty between the aforementioned banks.

Exit from easing monetary policy can be initiated by changing the key policy rates as well as by a withdrawal of the unconventional measures. Starting the exit with conventional monetary policy tools simply implies raising the main policy rate. As of the time of writing, the ECB has not yet taken this step: on June 10th it announced that it would keep its key policy rates unchanged for the 13th consecutive month.

In regards to the unconventional measures, it is useful to distinguish between all of the measures taken by the ECB. Below is how the ECB officials present their option (González-Páramo 2010c):

- The exit from the non-standard refinancing operations seems to be quite straightforward and does not require special effort due to their pre-specified maturity, and they can also be replaced by conventional refinancing operations, if needed;
- Similarly, the non-standard refinancing operations in foreign currency do not need to be renewed when they're deemed no longer necessary. In this context, the ECB's exit was first planned for January 2010, when they announced that they had discontinued foreign-currency providing operations with longer maturity. Nevertheless, in May 2010 they reintroduced the foreign liquidity providing swap lines, thus postponing the exit from this particular measure;
- The relaxed collateral requirement was announced to be of a temporary nature from the time it was introduced. Thus, this measure will be exited with the expiration of

the last long-term refinancing operation.

- The covered bond portfolio does not interfere directly with the monetary policy implementation. Therefore, the ECB can hold it until maturity or can let it gradually shrink as a result of redemptions. Alternatively, to avoid market distortions, the portfolio could be disposed of in a gradual way.

The special exit-friendly design of the ECB's non-standard measures has been often brought to the public's attention. In one of his speeches, the governor of the ECB underlined that (Trichet 2009a):

> *a number of measures will phase out naturally … and the size and scope of the outright purchases for which exit would require an unwinding or offsetting operations has been carefully calibrated; also the covered bonds purchase programme is limited in size compared with the overall scale of our refinancing operations and compared with our balance sheet … [thus making it easy to neutralize] … its effects on total liquidity via adjustments to the monetary policy instruments.*

The well thought-out design of the non-standard measures is surely to prove helpful for the ECB's authorities. However, given the scale of the required unwinding and the relatively untried nature of many of the tools used in the last couple of years, there exists risk of complications and so the exit will require a more substantial approach.

Among requirements for a successful exit implementation economists name a central bank's ability to act and the reputation to act when appropriate (e.g., Trichet 2009a). In regards to the technical capability and the operational framework, which characterizes the ability to act, the ECB claims that it possesses the technical ability and has a rich and flexible set of instruments to absorb liquidity as needed, more so, that their framework permits short-term interest rates to be changed while keeping some non-standard measures in place (González-Páramo 2010b). Another important consideration in the ability to act is the institutional capability and independence of the central bank. Until May 2010 the ECB refrained from purchasing government bonds, which was deemed as a positive sign by the market participants and helped sustain the reputation of the bank as an independent institution. However, in light of the fiscal problems in Greece, which threatened the fragile fiscal situation in a number of other Euro area countries, the ECB engaged in buying Euro area government bonds on the secondary

markets. Even if the ECB announced that their temporary decision was induced solely by the economic situation[16], the reputation of the bank as a completely independent institution was shattered. More so, no matter how defendable this decision may seem under the circumstances, it is on a risky distance from the European Treaty's prohibition of financing of government deficits on the primary markets.

The exit from the covered bonds and government bonds portfolios, thus, proves to be the most challenging decision for the ECB's policymakers, especially if one considers the potentially adverse effects on asset prices and inflation expectations. The example of Japan, moreover, suggests that the exit from bonds portfolio can be a very prolonged one, as the Bank of Japan still holds some of JGBs purchased during the quantitative easing program. While the comparative size of this portfolio to other central banks' is rather small, the potentially destabilizing market influences, as Minegishi and Cournède (2010) note, make it plausible to hold these bonds on the bank's balance sheet until financial markets return to normal and use the term deposits and central bank bills to absorb any excess liquidity when needed. In order not to undermine the economy's recovery the liquidity withdrawal needs to be done in a gradual manner.

The timing of withdrawal of the long-term purchased securities requires taking into account several factors (Minegishi and Cournède 2010):

- The withdrawal of these measures can expose remaining vulnerabilities in the financial system and thus it could be safer to keep them in place until the financial system proves robust to their removal;
- The exit could affect the process of balance sheet adjustments of commercial banks, which was facilitated in an environment of low interest rate and cheap liquidity provision;
- The exit will exert upward pressure on medium to longer-term segments of the yield curve, effectively leading to tighter monetary conditions, which would increase the cost of servicing debt for the fiscal authorities. Also, restrained collateral framework associated with monetary tightening can further increase the financial costs for the issuer of these bonds.

[16] Introductory statement with questions and answers with J.-C. Trichet at the June 10th 2010 press conference in Frankfurt am Main http://www.ecb.int/press/pressconf/2010/html/is100610.en.html#qa

The ECB authorities have emphasized on several occasions that market conditions are "what motivate and guide a gradual phasing-out process [the speed and path of which] will depend on developments in financial markets and the economy" (Trichet 2010c). To this point, in December 2009 the ECB attempted the start of exit "in an environment of improving financial market conditions and emerging signs of recovery" (same citation applies) when it announced its last 6-months and 12-months refinancing operations. However, the worsening fiscal conditions of the euro area economies and the impaired recovery led to an exit reversal and continued monetary easing. In March 2010 the ECB performed another 12-month refinancing operation and announced a 6-month LTRO for June 2010 and a fixed rate tender procedure with full allotment in the regular three-month longer-term refinancing operations for 28 July, 25 August and 29 September 2010. Moreover, as of the time of writing, they keep their policy rates at their historical low of 1%. Thus, the start of the exit, which in mid-2009 was assumed to take place in the first half of 2010, has been pushed further to at least the end of 2010, but more likely to 2011. To this point, Cotarelli and Viñals (2010) suggest that "continued stimulus is appropriate in 2010 for most countries, but exit could begin in 2011 if the recovery takes places at the speed currently projected".

The exit reversal of end-2009 suggests that the ECB is very cautious about exiting too early and about the consequences it might have. Had it not reversed that exit and continued providing "enhanced credit support" the already-fragile recovery of the euro area economies would have been seriously impaired. In addition, other risks, as identified in the first section of this chapter, could have evolved.

On the other hand, if the ECB sustains the enhanced credit support for too long it jeopardizes the proper functioning of the economy in the future and the price stability in particular. To this point, the ECB officials have announced on multiple occasions that their monetary policy stance "will be designed as always to deliver price stability in the medium and long term, in line with their main policy objective" (Trichet 2010c). In this case, the specific policy objective serves as a proof for market participants that, at least, there will be a very strong attempt by the ECB to preserve price stability.

Belke (2010) sustains that "price stability should take precedence in all decisions" and acknowledges the important role of communication. Coordinating the fiscal and monetary exits in the EU seems implausible as, first of all, it would undermine ECB independence, secondly, is

technically out of reach within the euro area, and thirdly, the fiscal exit is enforced by the markets to start earlier than the monetary one.

As of the time of writing, it is still too early to start any monetary exit in the euro area. The decisions of exit will generally be very complex, as there are many factors that need to be taken into account. However, based on the Japanese experience from the beginning of the previous decade, it might be the perfect time to elaborate some changes to the financial framework, as well as to the fiscal policies, as the easing policy is only a "symptomatic treatment". One of the lessons, if not the main, from the Japanese experience was to not rush with the exit until a clear program and clear numerical objectives are established (Girardin, Moussa 2010). To this point, the establishment of the European Systemic Risk Board is very welcome as a sign of an actual attempt to change something in the workings of the system.

The fact that it is still too early to start with the monetary exit does not, however, mean that it is too early to develop an exit strategy, which may be implemented whenever it is deemed appropriate by the policymakers. Recall that, as defined in Chapter II, an exit strategy is a policy with a certain set of principles that governs policymakers on the way out of a crisis, which typically compels them to devise significant interventions, towards normalcy - be it one different from the pre-crisis or similar.

Based on the findings of this thesis an alternative exit strategy for the European Central Bank is designed by developing a set of principles. Additionally, the present author defines the optimal elements of an exit strategy.

The optimal elements of an exit strategy entail that a central bank should:

- Firstly, *carefully consider the timing of the exit*, as it is the most difficult decision with the most significant consequences.

  To this point, a prolonged excessively accommodative monetary policy:

- poses direct threats to price stability;
- may cause occurrences of financial imbalances that, if extendedly present, bring to incidences of macroeconomic instability;
- may distort motivations of commercial bank on the interbank market;
- gives rise to moral hazard issues,

- once commenced, produces sharp valuation changes that may reduce banks' profitability and undermine their ability to support the economic recovery;

  Whereas, a premature tightening:
- Risks causing a double-dip recession;
- restricts credit conditions while the banking system is still restructuring its balance sheet;
- once started, is hard to reverse, should a deterioration in economic conditions materialize again.

o Follow the principles of *timeliness and gradualism;*

  Undeniably, the normalization of monetary policy can be successful only when it is directed in line with gradual improvement in economic and financial conditions. More so, a gradual exit is preferred to a one-off exit as the latter risks causing potential disruptions on the financial markets, however, in cases when the intervention measures a central bank employed were not of significant volumes, this recommendation may be revised.

o In regards to *international cooperation,* follow the principle of coordination *in* moderate asynchronicity rather than coordination *and* synchronicity.

o In regards to *coordination with fiscal policy,* the fiscal exit should be given the priority to commence first as it is more costly and less nimble stimulus instrument than the monetary one. In addition, an expansionary fiscal policy enforced over time has a direct impact on the accumulation of debt, whereas an easing monetary policy does not pose any direct immediate threats. Moreover, a monetary tightening would have negative effects on the fiscal positions, while a fiscal tightening does not necessarily complicate monetary management. However, in many countries to date, in the full unwinding of the sovereign debt crisis, the fiscal consolidation is enforced by the markets and so the fiscal exit has to come before the monetary exit and even earlier than initially planned. Thus this step is more a necessity rather than conviction.

o Employ extensive *communication,* to avoid formation of even more uncertainty than is already brought about by the current crisis. Moreover, communication in such areas as

timing and mode of exit is crucial for the successful implementation of the exit strategy as it contributes to the formation of market expectations.

While the optimal elements of an exit strategy certainly hold for the ECB as well, the Euro area specific elements need to be considered for ensuring that an exit strategy is a successful one. Thus, based on the findings of this thesis, an alternative exit strategy for the ECB entails:

- In regards to timing: the monetary exit should be delayed and more gradual, as the already commenced fiscal exit, enforced by the markets, which in normal conditions would have happened later, prohibits present monetary tightening, as it risks causing potential market disruptions.

  To date, it is not yet time for the ECB to start exiting, as the conditions on the financial markets, especially on the government bonds market, which caused the reversal of the first exit planned by the ECB for December 2009, are still tense. Currently, the exit is planned for, earliest, mid-2011; this might give enough time for the markets and the economy to recover enough to start with the monetary tightening.
- In regards to coordination with fiscal policy, there is little room for decision left there, as the fiscal exit has already been decided to commence first. Now the ECB can only follow its promise to conduct the exit in a more gradual manner.
- In regards to communication, the ECB needs to continue with its extensive communication. Although, there is room for improvement, for instance, in regards to the Securities Market Programme, where announcing more details, such as the duration of the programme, details on volumes and origins of purchased bonds, might prove beneficial.
- In regards to the unwinding of specific intervention measures, most of those employed by the ECB imply a natural, endogenous exit (for instance, the fixed rate full allotment procedures, the foreign currency liquidity providing operations, the enlarged list of collateral, which from the start was announced to be of a temporary nature) and thus, except a thorough consideration of market conditions, do not need high policy efforts. On the other hand, such measures as the covered bond and government bond purchases (which collectively account for €107 billion in the ECB

portfolio) due to their long-term maturity pose a significant challenge. The Japanese experience from the 2000s suggests that it is worth holding these securities until maturity, however, in this case the ECB exposes itself to a prolonged risk of default. To date, it is not clear which strategy is more beneficial for the ECB.

- In regards to the standard monetary policy tools, the interest rates have so far been at their lowest level of 1% for 13 consecutive months. A particular challenge will be deciding whether to start raising the policy rate before all unconventional measures are withdrawn, or after. On the one hand, the ECB will need to scale back their intervention in financial markets and reduce excess liquidity, and on the other hand, in view of their main objective of price stability, they will need to raise the policy rates.

CHAPTER V. CONCLUSIONS

The scope of this thesis was to identify the determinants of a successful exit strategy and the challenges policymakers face in designing one. To this end, the following conclusions are drawn.

Firstly, an exit strategy is a policy with a certain set of principles that governs policymakers on the way out of a crisis, which typically compels them to devise significant interventions, towards normalcy - be it one different from the pre-crisis or similar.

The need for an exit strategy is imposed by the significant non-standard intervention measures that have been implemented during the turmoil. To this point, non-standard intervention measures are those measures that directly target the cost and availability of funds for all economic agents in times when the former are scarce, such as the financial turmoil with its consequent liquidity dry-out. Moreover, depending on the factor they're targeting, non-standard intervention measures can be in the form of quantitative easing or credit easing, with different implications from the two. The main reasons for implementing non-standard monetary measures are the impaired transmission mechanism, which did not perform as smooth as prior to the crisis, and the zero lower bound, which imposed policymakers to implement new set of tools in line with the standard ones.

The context of the implementation of these measures by the ECB suggests that the use of the non-standard measures was indeed justified, as the use of the interest rate tool proved insufficient during the financial turmoil. The effects of these measures proved broadly positive, as the ECB, overall, managed to improve the conditions on financial markets by supplying significant amounts of liquidity in fixed-rate-full-allotment procedures, LTROs, foreign currency swap facilities and by accepting an enlarged list of collateral within their enhanced credit support programme. However, monetary easing was not the only effect they had: their use also lead to a considerable expansion of the balance sheets of central banks. Anyhow, the easing was achieved not only by the increased size of balance sheet, but also by the altered composition of the balance sheet, which allowed central banks to enhance the overall effects of unconventional policy measures, given constraints on policy implementation. The increases in the ECB's liabilities, as driven by the increased excess reserves, reflecting the high liquidity preferences of the financial intermediaries, which, in turn is caused, to a significant degree, by the heightened counterparty risks, created a situation of liquidity surplus. This situation, however, does not prove very

problematic, as the ECB possesses the technical ability to withdraw the surplus by the means of term-deposits, which have already been used in small scales.

Monetary easing in all its forms is the measure that poses the challenges and difficulties for an exit. The challenge is in that by purchasing debt securities, be it government bonds or commercial debt, central banks not only increase their balance sheet size, but also take on higher credit risk, thus increasing the possibility of central bank losses. The difficulty lies in the decision whether to hold the securities on the balance sheet until they mature, to sterilize surplus liquidity in the future or to dispose of them prior to maturity: if so, a one-off disposal risks creating potential market disruptions, whereas a gradual release may not go in line with central bank's objectives. The indirect quantitative/credit easing is somewhat less complicated as the disposal of collateral assets occurs naturally at the end of the lending term. However, together with the direct quantitative and credit easing it also contributes to the exposure of the central bank's balance sheet to heightened credit risk.

When designing an exit strategy policymakers need to take into account the coordination of the monetary policy with the fiscal policy, especially since from the start of the crisis the fiscal positions of many countries have been impaired (e.g., the increased government debt), which, in turn, poses challenges to the conduct of monetary policy. However, for an exit to be successful, i.e., to be followed by recovery and a consequent return to normalcy, it has to be coordinated not only between fiscal and monetary policies within a country, but also on an international level, or between countries. To this point, a complete synchronization of exits between countries does not only pose direct risks to the global recovery, but also appears to be almost impossible to implement, if one considers the cross-country differences. Hence, in the current conditions the best-case scenario for the exit on international level entails coordination *in* moderate asynchronicity rather than coordination *and* synchronicity.

An important aspect of crisis management entails expectations management. To this point, based on the results of the Bank Lending Survey, it is safe to state that the inflation expectations in the Euro area have been, and still are, well-anchored, although, there is now an increasing share of people that believe the inflation to rise moderately as well as to rise considerably, at the expense of the decreasing share of those who believe the inflation to stay about the same. However, fully relying on survey-based expectations measures is dangerous as it is often the case that the public forms its expectations based on the central bank's behavior believing that the latter possesses more and better information, and hence market expectations tend to be biased and, if

the anchoring is not as strong in reality as the policymakers assume it to be, it might shift the whole yield curve upwards and so a decision to increase policy rates may result in a much sharper tightening than expected. For this the author employed another measure of inflation expectations, the break-even inflation rate which conveys that by mid-2009, regardless of the significant increase in the ECB's balance sheet, which led to a larger risk than would normally be the case due to the presence of riskier assets accepted as collateral, direct interventions in credit markets, etc., the Euro area inflation expectations remained well anchored.

In the analysis of premature versus delayed exits the present author finds that with a premature exit, the economic recovery may be put at risk, as tightening comes at the very time when the pick-up in the economy is still fragile. In addition, the early exit may be extremely costly especially when inflation is below a central bank's definition of price stability. Moreover, if a central bank starts exiting prematurely, it will be hard for it to reverse its course, should a deterioration in economic conditions materialize again. On the other hand, with a delayed exit monetary conditions will remain too lax for too long, sowing the seeds of the next crisis. In addition, the later the tightening, the sharper it needs to be, thus producing valuation changes that may reduce banks' profitability and undermine their ability to support the economic recovery. Also, a delayed exit would distort private incentives and create risks to price, financial, and fiscal stability. These conclusions are vital in the development of an exit strategy.

Undoubtedly, the decision about the timing of the exit is a very difficult one for policymakers. Thus, it is not surprising that economists and authorities have come to discussing the second-best option or, namely, which of the two risks – of premature and delayed exits – would cause the biggest problems for the economy. While agreeing with the opinions of the cited economists, the present author believes that in the current situation in the second-best option discussion a premature exit is somewhat more preferable than a tardy one, as the latter, although clearly having its advantages, inadvertently leads to the build-up of new financial imbalances, to inflationary pressures and to a heightened moral hazard issue. In a not-so-distant time these imbalances could trigger a second, much like the current one, crisis, only then it risks having bigger consequences on the freshly recovered and still somewhat fragile economies. A premature exit, to this point, does not represent the optimal solution, as it, indeed, among others, entails risks of double-dip recession. However, to the author's opinion, an early exit is much like stepping one step-back on the way to recovery, whereas a delayed exit seems more of a return to

the initial (pre-crisis) positions. Hence, in the long-term perspectives, a premature exit may be more attractive than a delayed one.

In regards to the historical experience, the one of Japan in 1990s-2000s suggests that, overall, a smooth exit from quantitative easing, without overshooting of inflation, undermining economic recovery, or disrupting financial markets, is possible. Moreover, inflationary pressures do not pose a significant problem if a central bank has the necessary tools to exit and constantly communicates its intentions to the public. In addition, liquidity providing operations are rather easy to unwind, whereas private and public-assets may be kept on the central bank's balance sheet for a quite prolonged time, and pose significant challenges in terms of unwinding.

In addition the following lessons are drawn from to the Japanese experience:

- An increase in monetary base does not necessarily mean easier monetary conditions;
- The banking system is crucial for the success of a quantitative policy;
- Quantitative easing will only affect expected inflation if the increase in the size of the central bank's balance sheet is not only sizeable but also perceived as being permanent;
- Unwinding central banks' purchases of assets with longer maturities or shallower markets will be more challenging, not only in terms of potential market impact but also central bank losses;
- Central bank communication policies is crucial;
- Some challenges, such as introduction of the issue of financial stability into the stance of monetary policy, could extend beyond the exit.

Based on these findings, in the last section of the last chapter the author identifies the optimal elements of an exit strategy and proposes an exit strategy for the ECB. According to this the present author established that the optimal elements of an exit strategy entail that a central bank should:

- Firstly, *carefully consider the timing of the exit*, as it is the most difficult decision with the most significant consequences.
- Follow the principles of *timeliness and gradualism;*

  Undeniably, the normalization of monetary policy can be successful only when it is directed in line with gradual improvement in economic and financial conditions. More so,

a gradual exit is preferred to a one-off exit as the latter risks causing potential disruptions on the financial markets, however, in cases when the intervention measures a central bank employed were not of significant volumes, this recommendation may be revised.

- In regards to *international cooperation,* follow the principle of coordination *in* moderate asynchronicity rather than coordination *and* synchronicity.
- In regards to *coordination with fiscal policy,* the fiscal exit should be given the priority to commence first as it is more costly and less nimble stimulus instrument than the monetary one. However, in many countries to date, in the full unwinding of the sovereign debt crisis, the fiscal consolidation is enforced by the markets and so the fiscal exit has to come before the monetary exit and even earlier than initially planned. Thus this step is more a necessity rather than conviction.
- Employ extensive *communication,* to avoid formation of even more uncertainty than is already brought about by the current crisis. Moreover, communication in such areas as timing and mode of exit is crucial for the successful implementation of the exit strategy as it contributes to the formation of market expectations.

The exit strategy for the ECB that the present author develops, in turn, entails:

- In regards to timing: the monetary exit should be delayed and more gradual, as the already commenced fiscal exit, enforced by the markets, which in normal conditions would have happened later, prohibits present monetary tightening, as it risks causing potential market disruptions.
- In regards to coordination with fiscal policy, there is little room for decision left there, as the fiscal exit has already been decided to commence first. Now the ECB can only follow its promise to conduct the exit in a more gradual manner.
- In regards to communication, the ECB needs to continue with its extensive communication. Although, there is room for improvement, for instance, in regards to the Securities Market Programme, where announcing more details, such as the duration of the programme, details on volumes and origins of purchased bonds, might prove beneficial.
- In regards to the unwinding of specific intervention measures, most of those employed by the ECB imply a natural, endogenous exit and thus, except a thorough consideration of market conditions, do not need high policy efforts. On the other

hand, such measures as the covered bond and government bond purchases due to their long-term maturity pose a significant challenge. The Japanese experience from the 2000s suggests that it is worth holding these securities until maturity, however, in this case the ECB exposes itself to a prolonged risk of default. To date, it is not clear which strategy is more beneficial for the ECB.

- In regards to the standard monetary policy tools, the interest rates have so far been at their lowest level of 1% for 13 consecutive months. A particular challenge will be deciding whether to start raising the policy rate before all unconventional measures are withdrawn, or after. On the one hand, the ECB will need to scale back their intervention in financial markets and reduce excess liquidity, and on the other hand, in view of their main objective of price stability, they will need to raise the policy rates.

Within the scope of this thesis, however, the author cannot hope to cover all possible implications for an exit strategy as the financial and economic crisis is still in place and so other determining factors may still appear.

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